NETWORK WORLD
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Users wrestle with politics of net mgmt.

By Jim Brown
Senior Editor

ANAHEIM, Calif. — Users evaluating integrated network management systems are grappling with some thorny political issues surrounding the decision of whether to centralize or distribute management control.

Attendees at the Network Management Solutions '90 conference, sponsored by *Network World* here last week, said companies that are intent on centralizing network management may encounter resistance from departments or regional groups that want to retain control of their domains.

Vendors of network management systems, including IBM, have promised to develop systems that will accommodate the centralized and distributed approaches. With the latter, users will rely on a series of interconnected net management systems, each of which monitors and con-

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- **Users should plan for net control standards. Page 4.**

PHOTO ©1989 WALTER CALAHAN

AT&T's William Catucci

Top AT&T regulatory exec argues case for freedom

Q&A

William Catucci is AT&T's regulatory point man. As corporate vice-president of the Federal Regulatory Affairs Division, Catucci speaks for AT&T on such issues as custom nets and tariffing, and is an advocate of reduced regulation for the carrier.

A former infantry officer and a lawyer by training, Catucci has served in a variety of posts since joining AT&T as a sales representative in 1962. Most recently, he was vice-president of external affairs for AT&T's Eastern Region.

Catucci outlined his views on regulation in an interview last week with *Network World* Editor John Gallant and Washington Bureau Chief Anita Taff.

Rivals say AT&T is still dominant based on market share. Is that true?

Market share is not the sole indicia of dominance. Most people

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MCI stages $1.25b Telecom*USA buyout

Second- and fourth-largest long-haul firms agree to merge; MCI buys market share, analysts say.

By Bob Wallace
Senior Editor

WASHINGTON, D.C. — MCI Communications Corp. last week agreed to merge with Telecom*USA, Inc., the fourth-largest U.S. long-distance carrier, in a $1.25 billion deal that could accelerate consolidation in the long-haul market.

Under terms of the agreement, MCI will buy all of Atlanta-based Telecom*USA's stock for $42 per share. Both companies' boards of directors have approved the merger, which is subject to approval by Telecom*USA shareholders, the Federal Communications Commission and the Department of Justice.

The FCC said it will need only about three months to review the merger unless opponents raise "valid objections." The Justice Department has 30 days to determine whether the deal violates federal antitrust laws.

The merger will help MCI expand its customer base in the mid-range business market and increase the amount of fiber in its domestic network — moves that will help the carrier better compete with rivals AT&T and US Sprint Communications Co.

"We look at this merger as a strategic acquisition with the combined company coming out

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PHOTO ©1989 CINDY CHARLES

Novell's Ray Noorda and Lotus' Jim Manzi face merger questions.

Novell, Lotus face the job of making marriage work

By Susan Breidenbach
and Laura DiDio
Network World Staff

SAN FRANCISCO — With the shock waves created by the announcement of their merger still rippling through the industry, Novell, Inc. and Lotus Development Corp. last week faced the public and began outlining their plans for creating an entity to challenge the combined might of IBM and Microsoft Corp.

Novell Chairman Ray Noorda and his Lotus counterpart and soon-to-be boss Jim Manzi, stood side-by-side at a press conference here Monday trying to sell the merger concept to a room of somewhat skeptical journalists and analysts. The two dodged more questions than they answered and made it clear that most of the answers were yet to be found.

"We haven't even had a chance to discuss these things in-

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ANALYSIS

• • •

NetWare, LAN Manager face off, page 4.

BUYER'S GUIDE

Aggregator plans offer big savings

By Daniel Briere
and Mark Langner
Special to Network World

Service aggregators and multisite long-distance buying groups are restructuring the telecommunications user hierarchy so that even the smallest of companies can receive discounts once reserved for the largest users.

By aggregating the traffic of multiple user companies, these firms can offer carrier services at impressive discounts. Incremental discounts due to aggregation can be as high as 20%.

It's a young industry: Of the 40 national aggregators surveyed for this Buyer's Guide, the average has been in business just over a year.

Though young, their clout is significant. The top 20 aggregators buy almost $1.6 billion in services annually—more than 3% of the $50 billion long-distance industry.

The term "service aggregators" adds a level of confu-

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NETLINE

AT&T BEATS OUT MCI and US Sprint as it signs another Tariff 12 deal — this time with Xerox for a $121 million, 5-year custom network. Page 2.

MICROSOFT PROMISES TO support Apple's CL/1 in its Excel spreadsheet. Page 2.

RBHCS GET GREEN LIGHT from FCC on ONA plans. Decision opens door to provision of enhanced services through regulated phone units. Page 2.

USERS LAMENT NETWORK limitations of imaging systems at Association for Information and Image Management conference. Page 6.

MCI EXEC MCGOWAN listed in fair condition after undergoing exploratory chest surgery. Page 60.

NEWSPAPER

Xerox signs with AT&T for $121m Tariff 12 network

Five-year deal includes voice, data services for 300-site network; AT&T beats out MCI, US Sprint.

By Ellen Messmer
Washington Correspondent

STAMFORD, Conn. — Xerox Corp. last week awarded AT&T a five-year, $121 million custom network contract under the carrier's Tariff 12 plan.

The custom network will serve more than 300 Xerox locations, including sales and service offices, distribution centers, manufacturing sites and billing operations. Services to be provided include AT&T's Software-Defined Network service; private data lines, including integrated access service for voice and data; outbound interstate and international calling; and 800 services, said Fred Bolton, Xerox's manager for telecommunications. AT&T will now handle all of Xerox's long-distance traffic, he said.

AT&T beat out MCI Communications Corp. and US Sprint Communications Co. for the deal. Bolton said AT&T offered lower rates for every service. In two key categories, off-net-to-off-net calling and on-net-to-on-net calling, the AT&T bid was between 20% and 30% less expensive than the bids from MCI and US Sprint, he said.

The contract is one of the largest Tariff 12 arrangements filed to date. Larger deals include General Electric Co.'s five-year, $300 million dollar contract and five-

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Microsoft promises Excel users Apple CL/1 support

Follows Apple CL/1 releases for IBM mainframes.

By Susan Breidenbach
West Coast Bureau Chief

SAN FRANCISCO — The prospects for Apple Computer, Inc.'s CL/1, which lets Macintosh applications access host data bases, continued to brighten last week as Microsoft Corp. announced that Excel users would have CL/1 support by early summer.

The announcement here at MacWorld Exposition San Francisco 1990 came on the heels of Apple's release late last month of CL/1 server software for IBM's MVS/TSO and VM/CMS mainframe environments, joining the existing CL/1 Server for VMS.

Users can now create a single Macintosh client application that can communicate with a variety of widely installed data bases running in these host environments, including DEC's Rdb, IBM's DB2 and SQL/DS, Informix Software, Inc.'s Informix, Oracle Corp.'s Oracle and the VMS version of Sybase, Inc.'s SQL Server.

On the client side, popular Macintosh applications that now support CL/1 include Acius, Inc.'s 4th Dimension and Blyth Software, Inc.'s Omnis 5 data bases, Ashton-Tate Corp.'s Full Impact and Informix's WingZ

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FCC approval of ONA plans a milestone for the RBHCs

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The Federal Communications Commission last week approved the regional Bell holding companies' modified Open Network Architecture (ONA) plans, opening the way for the RBHCs to begin providing enhanced services through their regulated telephone units.

Approval of the ONA plans eliminates the requirement that the RBHCs get permission, by filing a Comparably Efficient Interconnection plan, each time an enhanced service is offered through the telephone unit. The local carriers now have the green light to begin shifting enhanced services such as electronic messaging, protocol conversion, voice messaging and gateways from subsidiaries into their telephone operations.

The RBHCs were also cleared to begin provision of ONA network services that provide enhanced capabilities for applications such as call distribution, routing, multiplexing, network control and caller identification.

ONA is a key component of the FCC's Third Computer Inquiry, which was designed to allow the RBHCs to provide enhanced services through network operations rather than through separate subsidiaries. It requires that competing enhanced services providers be given equal access to

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Briefs

Merger complaint filed. Several Novell, Inc. stockholders filed a class action lawsuit last week seeking an injunction to block Novell's proposed merger with Lotus Development Corp. The complaint, filed in the Delaware Court of the Chancery, alleges that Novell and its directors "breached their fiduciary duty to stockholders" and that Lotus was an accomplice in that act. Novell and Lotus issued a statement saying, "We believe the suit to be without merit and intend to defend [our action]."

A source within Lotus said, "This kind of thing happens all the time. We expect the merger will go through as planned."

Newbridge lands show biz. CBS, Inc. last week signed a contract with Newbridge Networks, Inc. for a nationwide T-1 backbone network linking its New York corporate headquarters with its corporate data center in New Jersey and broadcast centers in Washington, D.C. and Los Angeles. Network installation is scheduled to begin at the end of the month. Upon completion of the project, the net will be expanded to serve large CBS-owned and -operated stations across the country.

AT&T sheds unit, lands contract. AT&T last week sold its Synchronous Terminal Products division to Memorex Telex N.V., an Amsterdam-based computer manufacturer. Under terms of the deal, AT&T will hold an equity position in Memorex Telex and receive royalties for five years on the sale of its products. AT&T will manufacture the products — which include the 6500 Multifunction Communication Systems line of IBM 3270-compatible devices — for two years while the companies integrate their product lines.

In a separate announcement, AT&T last week signed a contract for global messaging services with Pratt & Whitney, a Hartford, Conn., aerospace manufacturer. The subsidiary of United Technologies Corp. said it plans to use the AT&T EDI electronic data interchange service to automate purchase, payment and shipping notices and it will implement AT&T Mail for general messaging with its units.

IBM delivers on OSI. IBM last week said it will begin shipping its Open Systems Interconnection/Communications Subsystem for VM in May, a month ahead of schedule. The mainframe software lets IBM-based OSI applications communicate with OSI applications on other vendors' machines. IBM began shipping its OSI/Communications Subsystem for MVS last month.

Ameritech to sell ICL ISDN wares. Ameritech Information Systems, Inc. last week signed a two-year distribution contract with International Computers, Ltd.'s (ICL) North American Networks Industry Division. Ameritech will distribute ICL's line of Integrated Services Digital Network products, which include a personal computer Basic Rate Interface.

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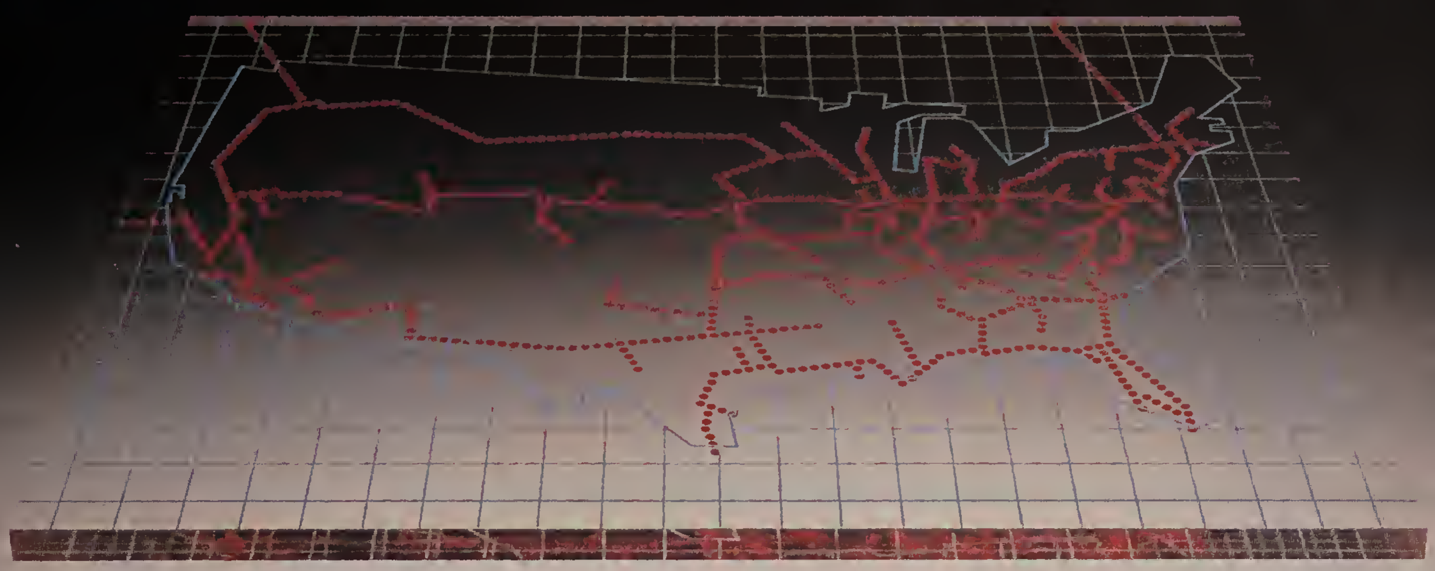

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Novell/Lotus union to play key role in LAN OS battle

New dynamics in NetWare, LAN Manager war.

By Susan Breidenbach and Laura DiDio
Network World Staff

SAN FRANCISCO — Experts are divided on whether the planned merger of Novell, Inc. and Lotus Development Corp. is a good or bad idea, but there is general agreement that it may play a pivotal role in the battle between Novell's NetWare and Microsoft Corp.'s LAN Manager.

At a recent trade show here, a data base expert suggested that Novell's NetWare SQL data base product might not be getting the development resources it needs because "Novell has its hands full catching up to LAN Manager."

Since Novell's NetWare currently has at least half — and by some accounts as much as three quarters — of the network operating system market, while LAN Manager's share is next to nil, the remark was a bit startling.

However, it bears witness to the success Microsoft has enjoyed in its efforts to convince people that NetWare is a has-been, as local-area nets evolve from the file server foundation of the 1980s to the emerging client/server architecture of the 1990s.

Microsoft's marketing blitzkrieg has yet to slow down NetWare sales or boost those of LAN Manager significantly. But some LAN industry experts say it is starting to give the upper echelons of corporate MIS departments some food for thought, and could eventually divert the country's largest LAN users from their NetWare course.

"Ordinarily, a company with a more than 50% market share would be able to dictate standards, but Novell clearly hasn't been able to do that," said Lee Doyle, an analyst with International Data Corp. (IDC) in Framingham, Mass.

"Novell has been facing a lot of smoke from Microsoft about client/server applications and it needs to come up with those applications," said Mary Modahl, an analyst at Forrester Research, Inc. in Cambridge, Mass. "Novell is now taking the bull by the horns; Lotus products on the front end and a Sybase [Inc.] data base engine on the back end" make a great foundation for client/server applications. (Lotus owns 15% of Sybase.)

Modahl and a number of her colleagues said the merger levels the playing field considerably, putting another industry giant across the table from Microsoft. Two major players acting as evangelists for client/server computing should help speed user acceptance of it.

"It's a coup for users because they get the benefit of two solid competitors slugging it out in the marketplace," said John McCarthy, another analyst at Forrester. "If Microsoft wasn't in a bunker mentality about NetWare before, they are now."

Microsoft Chairman Bill Gates flatly denies this with all the assurance one would expect from the head of a company whose stock has risen 250% in the last year. "This doesn't affect us. We'll continue to do business as usual," he told *Network World* at a meeting in Boston last week.

Dave Atlas, a groupware analyst with IDC, agreed. "This merger gives Microsoft a more equal competitor, but it doesn't leave them quaking in their boots. It will be several years before Lotus and Novell can really integrate the two companies and achieve this so-called maximum synergy everyone is talking about."

And therein lies the rub. The merger could end up being a coup for LAN Manager vendors if the integration efforts cause Novell to take its eye off the NetWare 386 ball during the rest of the year.

If this happens and if Microsoft comes up with a solid release of LAN Manager 2.0, "the LAN Manager camp could win big," McCarthy said.

Doug Gold, manager of communications industry research at IDC, said Novell and Lotus are also facing some technical challenges. "Whether the two companies can move beyond the limitations of MS-DOS, which is their heritage, and on to the next generation of operating systems and application environments is the big question," he said.

Forrester's McCarthy said IBM could end up casting the final vote. "Will IBM do anything in 1991 with OfficeVision and NetWare?" he asked. "If they do, then it's Strike 3 for LAN Manager. Strike 1 was that [the initial version of] LAN Manager didn't work. Strike 2 was that Lotus and Novell are married. Strike 3 [will be] if IBM even tacitly supports NetWare in its own environment."

Users should plan for dawn of net control standards

By Bob Brown
Senior Editor

ANAHEIM, Calif. — Open Systems Interconnection network management standards are starting to firm up, but users and analysts at a conference here last week said widespread implementation won't happen until at least mid-decade.

Attendees at the Network Management Solutions '90 conference said that although the full-fledged standards are still far off, the International Standards Organization's approval of a set of OSI net management standards last November and vendor commitment to those standards are reasons for optimism.

Thus, while waiting for products to emerge, users must settle for planning their transition to OSI network management, said Kedem Kaminsky, senior software engineer at Aeronautical Radio, Inc. in Annapolis, Md.

Kaminsky, who is plotting Aeronautical Radio's OSI strategy, said, "From a user point of view, the best we can do is to make certain our vendors are committed to implementing OSI standards as they are finalized."

"There is a real urgency to get OSI network management off the ground," said Daniel Blum, a consultant at OSI Migrations, a consulting firm in Takoma Park, Md. Among the forces driving net management standards is the government mandate to migrate its networks to OSI.

Beginning in August, the Government OSI Profile (GOSIP) standard will require federal agencies to buy network equipment that conforms to a set of OSI specifications, Blum said.

OSI net management standards promise to enable users to retain existing network equipment and choose among multiple network management vendors, said Will Collins, a consulting engineer with Codex Corp. in Mansfield, Mass.

The first of the OSI net management standards to emerge — the Common Management Information Services/Common Management Information Protocol (CMIS/CMIP) — will be followed by a host of other net management standards in the next few years.

One of the standards pending is the Management Information Model, which deals with managed objects, or devices on a network to be managed, and the relationships between them, Collins said.

The OSI/Network Management Forum recently announced a library of 33 objects to be managed by OSI-based net management systems and expects that products based on forum specifications will be available late this year.

The forum is a vendor consortium whose goal is to promote ISO net management standards

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No simple way to justify integrated network mgmt.

By Paul Desmond
Senior Writer

ANAHEIM, Calif. — Although integrated network management systems are the Holy Grail of net management, promising the ultimate in monitoring and control, they come with a price tag that is difficult to justify to upper management.

Users and analysts attending the Network Management Solutions '90 conference, sponsored by *Network World* here last week, said there is no easy way to quantify the benefits of the costly systems.

Part of the problem is that the importance of network reliability varies by vertical industry. One hour of downtime for an airline reservation net can cost $3 million, but a more typical industry average is $2,000 to $3,000 per hour, said James Herman, principal at Northeast Consulting Resources, Inc. in Cambridge, Mass.

Although the idea of centralized monitoring and control over all voice and data network elements appeals to almost everyone, some users simply cannot afford integrated net management systems.

A systems programmer for a municipality near here who requested anonymity said the AT&T Accumaster Integrator implementation his department was evaluating cost about $400,000.

"We're just not to the point where we can justify that yet," he said. The city is already using NetView to manage its predominantly IBM network. However, Accu-

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Systems Center adds new capabilities to Net/Master

Firm quick to enhance newly acquired product.

By Paul Desmond
Senior Writer

ANAHEIM, Calif. — Systems Center, Inc. last week announced an array of enhancements for the Net/Master Systems Network Architecture network management system, some of which will be available this fall. The company recently acquired the marketing rights to the product from Cincom Systems, Inc.

Company executives at the Network Management Solutions '90 conference here said enhancements will include everything from a feature that will support unattended data centers to support for voice networks.

Victoria Duckworth, Net/Master senior product manager for Systems Center, said that by this fall, the company will ship Operations Information Management (OIM), a collection of applications for configuration and inventory management.

The package is an extension to Net/Master's Info/Master component, which is a central repository for information about network components and activity.

Up until now, only a tool kit was available to help users build their own applications that would use Info/Master to address problem, change and configuration management, Duckworth said.

OIM will cost about $50,000 to $60,000, she said.

Systems Center will also announce Remote System Execution, an enhancement to Sys/Master, the Net/Master component that helps users automate tasks when running IBM MVS and VM systems, she said.

Remote System Execution will run on a personal computer attached to a mainframe and automate various tasks associated with bringing up MVS- or VM-based mainframes after a failure or planned outage.

The software will be especially useful for users running unattended remote data centers.

Duckworth could not detail pricing for the product but said it would be available this summer or early fall.

By the end of this year, Systems Center plans to announce a Net/Master product to address management of token-ring local-area networks, Duckworth said.

The product will support from a central site features such as configuring LAN bridges, as well as handling user moves and changes.

"Users don't want to have anyone on the LAN who has to do these kind of functions because they lose the cost benefits of the LAN" if they need someone to manage it, Duckworth said.

Two prototype net management products are currently under development in Australia by Software Developments International Pty., Ltd. (SDI), said Gerald Hummel, senior vice-president for marketing and strategic planning at Systems Center.

SDI is the company that developed Net/Master; Systems Center is currently in the process of acquiring the firm.

The first product, tentatively named Tele/Master, is due out in 1991 and will give Net/Master support for management of voice

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Show-goers say imaging hitting network roadblock

By Tom Smith
New Products Editor

CHICAGO — Attendees at last week's Association for Information and Image Management (AIIM) show here agreed that imaging is becoming a business necessity, but some said networking limitations are an obstacle to enterprisewide implementation.

Limitations cited by show-goers include the difficulty of integrating imaging systems into existing multivendor networks and the fact that current imaging systems cannot easily exchange data with applications such as data bases.

But imaging systems are used widely enough in industries such as banking that they have gained credibility and are becoming a competitive necessity, according to Scott McCready, director of image services for International Data Corp. in Framingham, Mass.

"This is not a technology that you can be passive about," McCready said, adding that users should begin exploring use of the technology.

Integration a problem

Despite exhortations about competitive advantages, some users said vendors aren't delivering products that can be adequately integrated into nets.

Bristol-Myers Squibb Co. of East Brunswick, N.J., is currently using a three-node Ethernet-based imaging system in its Research Information Center, which retains research and development documentation for the pharmaceutical company.

Despite productivity gains from replacing microfilm, the company is not ready to deploy imaging in other areas, according to Alan Gilson, project manager for technology assessment at Bristol-Myers Squibb. This is due in part to the system's inability to be integrated with the company's heterogeneous blend of computers and networks.

The company uses IBM and Apple Computer, Inc. Macintosh personal computers, Digital Equipment Corp. VAXes and IBM mainframes on networks ranging from IBM Token-Ring and Apple AppleTalk local-area networks to Systems Network Architecture and DECnet nets.

"We haven't seen anything that will talk to our various platforms," Gilson said. The company's current imaging system from Genesis Imaging Technologies, Inc. runs on Sun Microsystems, Inc. workstations, which access images from a Sun server.

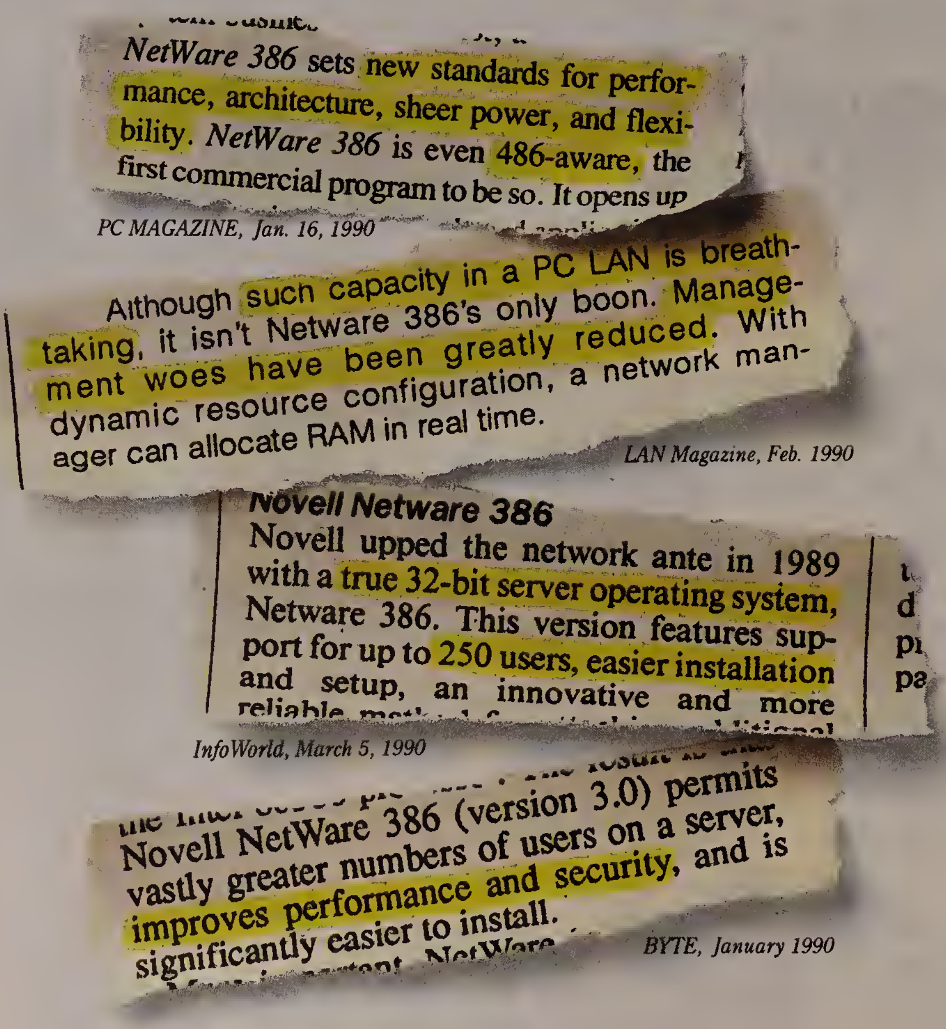
The fact that data cannot be easily transferred between imaging and other applications is also a barrier to increased deployment at Bristol-Meyers Squibb.

For its existing imaging application, the company wanted to automate a process by which document identifiers stored in a data base could automatically be passed to the image server for retrieval of the document. Instead, users have to transfer the document identifier from the data base application to the imaging application, which then initiates image retrieval from the image server.

Current LAN-based offerings cannot support a heavy load of workstations or image traffic, according to Robert Stephenson, director of computer operations

Corrections: In the brief "AT&T announces fractional T-1 cuts," (*NW,* April 9), an AT&T service was incorrectly identified. AT&T introduced off peak rates — offering savings up to 28% — and plans to deploy service to an additional 84 cities for its 56K and 64K bit/sec Accunet Switched Digital Service.

The subhead to the headline "Northern Telecom to sell last PBX sales unit to Nynex" (*NW,* March 26) was incorrect. Nynex Meridian Systems, the joint venture formed by Northern Telecom, Inc. and Nynex Corp., will be 80% owned by Northern Telecom.



NetWare 386 sets new standards for performance, architecture, sheer power, and flexibility. *NetWare 386* is even 486-aware, the first commercial program to be so. It opens up

PC MAGAZINE, Jan. 16, 1990

Although such capacity in a PC LAN is breathtaking, it isn't Netware 386's only boon. Management woes have been greatly reduced. With dynamic resource configuration, a network manager can allocate RAM in real time.

LAN Magazine, Feb. 1990

Novell Netware 386

Novell upped the network ante in 1989 with a true 32-bit server operating system, Netware 386. This version features support for up to 250 users, easier installation and setup, an innovative and more

InfoWorld, March 5, 1990

Novell NetWare 386 (version 3.0) permits vastly greater numbers of users on a server, improves performance and security, and is significantly easier to install.

BYTE, January 1990

After everything that's been said about NetWare® 386,

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for Atlanta-based National Data Payments Systems, a subsidiary of National Data Corp.

Stephenson said his company is already considering an application that would involve 20 image workstations, but most vendors' products can only accommodate smaller networks. "From a technical standpoint, the big companies should be there by now," he

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Users wrestle with politics

continued from page 1

trols devices within a geographic region or performs a specific network management function.

"The decision is not going to be defined by technology," said Jeffrey Cook, first vice-president and manager with Glendale, Calif.-based Security Pacific Automation Co., Inc., which provides data processing and network services to Security Pacific Bank. "It will be defined by the corporate culture."

The initial temptation for users is to utilize systems such as IBM's NetView and AT&T's Accumaster Integrator from a central site. In this scenario, NetView or Accumaster Integrator could monitor and control network devices and support independent device management systems that control a specific vendor's equipment.

Graphical workstations attached to the mainframe, in the case of NetView, or to a 3B5 minicomputer, as with Accumaster Integrator, provide a map displaying the status of the entire network. The workstations are also used to issue commands to rectify network problems.

But centralized systems have one major drawback. "Centralized network management is a huge single point of failure," said James Herman, principal at Northeast Consulting Resources, Inc. in Cambridge, Mass.

The only way to guard against that threat is to install a backup processor. "If any one product can integrate everything, can anyone afford to run it?" asked Cook. "What happens if it crashes? You need a backup."

Replicating the processors, however, can be extremely expensive. Companies such as Digital Equipment Corp. and Hewlett-Packard Co. avoid the risk of a single point of failure by advocating the distribution of net management tasks among multiple sites and processors.

Under DEC's Enterprise Management Architecture and HP's OpenView, net management software can run on a large centralized processor or on smaller, less expensive systems such as DEC MicroVAXes or HP 3000 Series minicomputers that are linked in peer-to-peer networks.

Each processor in the distributed model will control certain network devices or independent device management systems. This limits the amount of damage to overall network management if a processor should fail.

Culture shock

Network managers examining centralized and distributed models are facing some of the same issues MIS managers are encountering with local-area networks. Once they have them, many LAN users are unwilling to relinquish network control and management to a central site, analysts said.

"A lot of organizations want to retain local management," Herman said. A distributed management approach can support that.

However, Atul Kapoor, vice-president of Kaptronix, Inc., a consultancy in Haworth, N.J., said, "Some corporations, by their very nature, are highly centralized." These companies — mostly Fortune 500 firms — will likely implement centralized systems, he said.

Even if integrated management tasks are distributed, users will want to retain some form of central control by building a central-site repository where historical network management data can be stored, said Jerry McDowell, a communications consultant in the META Group's newly formed Carmel, Calif., office.

This data base will allow local and remote users to perform such tasks as examining historical net performance and studying how well certain vendors responded to repair requests.

"If all that data isn't at a central site, performing those tasks won't be insurmountable, but it will be much more difficult," McDowell said.

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Microsoft vows CL/1 support for Excel

continued from page 2

spreadsheets, and Neuron Data, Inc.'s Nexpert Object and Odesta Corp.'s GeoQuery. As if this group of products doesn't already represent a critical mass of support for CL/1, users can take advantage of the addition of Excel — the most widely used Macintosh spreadsheet program.

"Using the solution that Microsoft Excel provides, we can offer employees access to critical business information stored in central data bases from within a familiar environment," said Scott Joy, a senior research associate in the information systems department at Boston's Liberty Mutual Insurance Co.

And Excel users won't have to pay much for that access, at least on the client side. By mid-1990, Microsoft will start bundling the CL/1 client software with each copy of Excel and will offer existing users a CL/1 upgrade for $9.95.

"As you can see from our pricing, we are looking at it as a service to our user base," said Pete Higgins, Excel product manager at Microsoft.

Based on SQL, CL/1 provides front-end Macintosh applications with a uniform interface for retrieving data from any host that supports CL/1 server software. Developers can write front-end applications without worrying about the specific host the application needs to access.

CL/1 consists of two programs: a CL/1 client that runs in the Macintosh and a CL/1 server that runs in the host. The client receives data requests from the Macintosh application, routes them to the appropriate host and data base, and then takes the host's responses and inserts them into the application.

The CL/1 client will be an integral part of Release 7.0 of the Macintosh operating system when it becomes available. Meanwhile, Apple is licensing the client to software developers who, in turn, bundle it with their applications.

The CL/1 server takes the CL/1 client's query and translates it into a request the host data base can understand. It then performs the same function in reverse when the response is sent from the host to the client. Since the various host data bases use different dialects of SQL, the CL/1 Server has to contain a "data base adapter," or translator, for each of them.

The CL/1 Server for VMS is priced at $5,000, the VM/CMS version costs $15,000, and the MVS/TSO version costs $20,000. A developer's tool kit for building CL/1 applications costs $695.

CL/1 is being touted as a platform for building client/server applications that are distributed across a heterogeneous network of computers, but the client side is actually quite homogeneous: pure Macintosh.

There is currently no CL/1 client support for IBM Personal Computers. Users that want to build distributed applications incorporating both types of workstation environments must use a different solution for the non-Macintosh desktop.

Vance Hoffman, CL/1 product manager at Apple, said his group has actually developed a CL/1 client for DOS but has not decided what to do with it yet.

Imaging hitting network roadblock

continued from page 7

said. "They've been playing around with this for quite a while."

But at least one imaging user interviewed by *Network World* plans to expand its use of imaging from a single application to multiple applications.

Burbank Hospital in Fitchburg, Mass., is currently using an imaging system to manage patient medical records. Imaging will also be used to support the hospital's patient demographic data base and a laboratory test results application, according to Mark Zajicek, manager of patient information services.

Once the system is in use with these other applications, users will have the ability to exchange data between the applications. Such capabilities will require six to nine months' development work, which is not prohibitive considering the benefits, Zajicek said.

Systems Center adds to Net/Master

continued from page 4

networks, Hummel said. The other is an environment management system that monitors such resources as air conditioning and security systems. He said the company will announce more details on that product later this year.

Analysts at the conference here last week said Systems Center is also expected to announce alliances with major vendors such as Digital Equipment Corp. and Tandem Computers, Inc.

The alliances will likely be similar to the existing alliance with AT&T, which resulted in a product that ties Net/Master to the AT&T Accumaster Integrator, said David Passmore, a partner with Network Strategies, Inc., a network consulting practice of Ernst & Young in Fairfax, Va.

The DEC and Tandem alliances have been stalled by an ongoing lawsuit involving SDI and Cincom Systems, Inc., which owned Net/Master marketing rights until Systems Center acquired them earlier this month, analysts said.

Duckworth would not comment on any pending agreements with other vendors, although she did say, "We're talking to a lot of major players and vendors."

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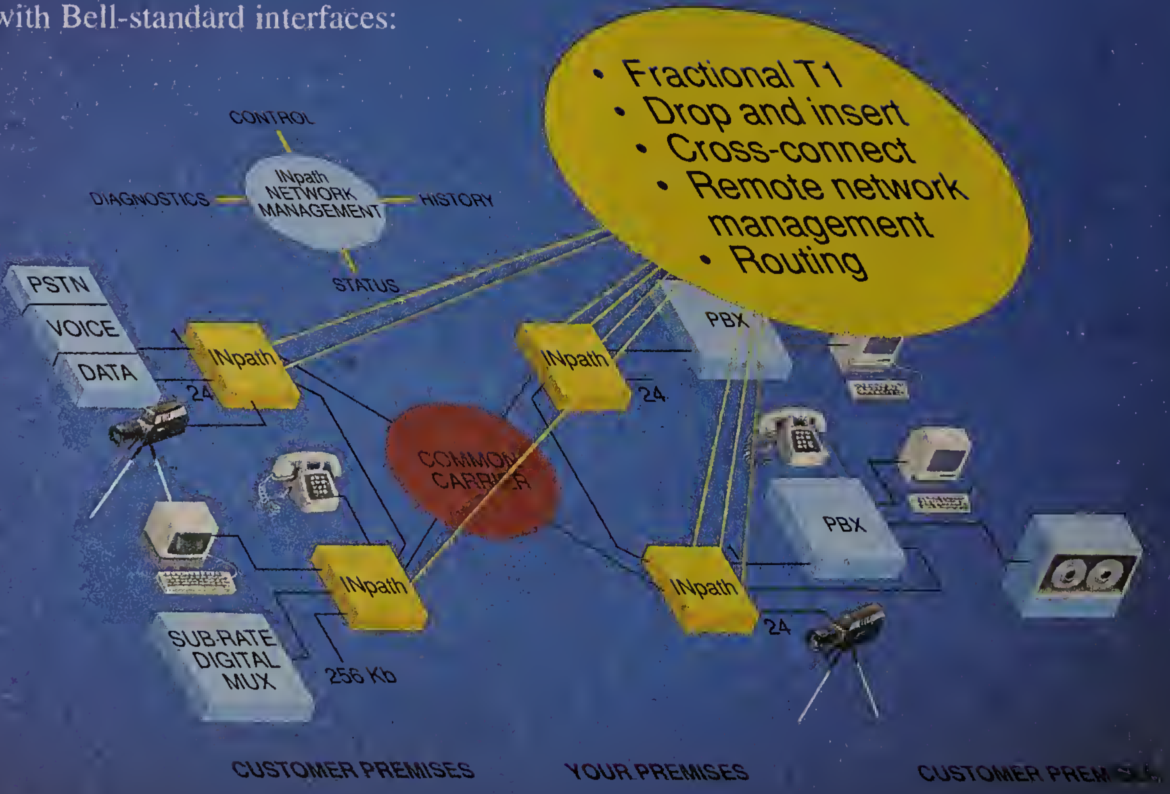

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

"The incentive for the Lotus/Novell merger was from the Lotus side. I don't think Novell needed any help."

David Perro
Industry analyst
Dataquest, Inc.
San Francisco

People & Positions

Bell Communications Research last week said it appointed **Edward Grogan** vice-president of finance and administration.

Grogan succeeds **Donald Baker,** who earlier this year was elected president and chief executive officer of Ameritech Services, Inc.

Previously, Grogan served as vice-president of human resources for Bell Atlantic Corp.

Grogan will oversee BELLCORE's comptrollers group, corporate personnel, government affairs and technical education and training center. Grogan will also serve as a nonvoting member of BELLCORE's board of directors.

Contel Federal Systems recently appointed **Robert Spearing** to the post of vice-president of space services.

Spearing joined Contel Federal Systems after 27 years with the National Aeronautics and Space Administration, where he most recently served as director of operations and data systems at the Goddard Space Flight Center.

In his new role, Spearing will focus on ground terminal operations and maintenance, space flight mission operations and services support of the government systems market.

MCI Communications Corp. rcently named **Staunton Oppenheimer** director of sales for northern New England. Oppenheimer will be responsible for general business sales in Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

Treasury Dept. bans C&P from bidding during probe

Clamps down on carrier after fraud allegation.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — Accusing Chesapeake & Potomac (C&P) Telephone Co. of fraud, the Department of the Treasury last week temporarily suspended C&P Telephone and its Bell Atlantic Corp. parent from bidding on all federal contracts, pending an investigation.

The Treasury Department alleged that C&P Telephone engaged in "fraud and material misrepresentation" in its bid to supply the department with a $100 million digital switching system. The procurement calls for a digital system to serve 16 Treasury Department locations with 20,000 lines in the Washington area. The Treasury Department declined to detail what elements in the C&P Telephone bid it considers to be fraudulent.

Bell Atlantic officials charged that the Treasury Department is trying to eliminate C&P Telephone from the bidding contest by alleging that the Northern Telecom, Inc. Integrated Services Digital Network handsets that C&P Telephone offered are commercially unavailable and, therefore, constitute a misrepresentation. Federal regulations require that equipment presented in bids already be market tested.

Bell Atlantic declined to release the model number of the handset in question but said it will contest the fraud charges and emphasized that the IDSN handsets meet the Treasury Department's requirements.

> The Treasury Dept. alleged that C&P engaged in "fraud and misrepresentation."

▲▲▲

Tony Murray, vice-president of the Federal Systems Division for Bell Atlantic, said his company would fight the suspension.

Bell Atlantic will appeal the action to the Treasury Department's procurement section. A Treasury Department spokesman said that if Bell Atlantic "can produce any convincing evidence

(continued on page 11)

INDUSTRY BRIEFS

Bell Atlantic Corp. last week said its **Bell Telephone Co. of Pennsylvania** subsidiary has agreed to pay $42 million in fines to settle a lawsuit in which it was charged with using deceptive techniques to sell services.

The settlement ends a two-year lawsuit brought by Pennsylvania's attorney general and consumer rights groups that accused the carrier of selling services — such as call waiting and speed dialing — without informing users of the charges or the fact that the services were extra-cost options.

Under terms of the settlement, Pennsylvania Bell agreed to pay $36.4 million to about 1.5 million residential customers, $5 million to establish a telephone education fund and $450,000 to the state in penalties.

Novell, Inc. last week said it has licensed its FastPath AppleTalk-to-Transmission Control Protocol/Internet Protocol gateway to **Shiva Corp.,** a Cambridge, Mass.-based local- and wide-area networking company.

FastPath is a gateway that links Apple Computer, Inc. Macintosh networks to TCP/IP nets. The product was acquired by Novell last year when it bought **Excelan, Inc.**

Novell is giving Shiva manufacturing, distribution, service and support rights for FastPath as part of an ongoing effort to refocus on software and divest itself of hardware products. Novell will retain the technology rights to the product and may license it to other vendors.

Shiva is planning to market the product as Shiva FastPath later this summer.

Novell will receive undisclosed royalties from Shiva for the

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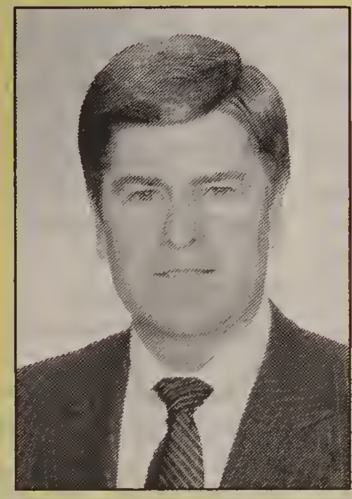


"We want ISDN to play a more dominant role in COS. We want to end up with an ISDN tester that conforms to the abstract test suites developed by the North American ISDN Users Forum. And then we want to issue COS Marks [for ISDN gear]."

Steve Hudson
Chief Operating Officer, COS
Former principal consultant in Booz, Allen & Hamilton, Inc.'s Government Systems Group.

COS' Hudson lays out group's priorities

Consortium to offer consulting/research services, fund development of ISDN conformance test tools.

By Ellen Messmer
Washington Correspondent

McLEAN, Va. — Three months after stepping into the newly created post of chief operating officer at the Corporation for Open Systems International (COS), Steve Hudson says he's laid a new course to steer the consortium out of turbulent financial waters.

Last year, COS overestimated sales of its OSI performance test tools by about $3 million, resulting in the layoff of 40% of its staff in August.

Last year's cash crunch also forced COS to sell the rights to its test system products to settle an outstanding debt with the National Computer Centre in England.

According to Hudson, COS only earned roughly $1 million in sales out of the still young Open Systems Interconnection test systems market and does not expect to exceed that level of revenue this year either.

Consequently, COS has lowered its sights on developing OSI test tools, choosing to cut costs by farming out development of test systems to third parties.

COS is instead trying to drum up new income by securing research and consulting contracts with government and commercial users. This should help the organization boost revenue to fund new projects. Currently, 80% of its income is still generated from membership dues, Hudson said.

In addition to its work on the OSI front, COS will attempt to branch out into the Integrated Services Digital Network market by marketing an ISDN test system. It will also complete the integration of the North American MAP/TOP Users Group into the COS organization.

While COS will continue to market OSI test systems, it hopes to win contracts from government and private organizations for research expertise and consulting services relating to OSI.

"We're going to be very careful about every bid. We're going to be sure they fall within the COS mission," Hudson told *Network World* in a recent interview. Under the legal framework in which COS operates, all work performed must be publicly available.

Making GOSIP a priority

High on the organization's priority list is its desire to provide Government Open Systems Interconnection Profile (GOSIP) testing services in time to meet the Aug. 15 deadline, after which all federal agencies will be required to acquire GOSIP-compliant products.

> Currently, 80% of COS' income is still generated from membership dues.

▲▲▲

There are no accredited GOSIP labs yet, but COS hopes to be the first. The organization, which plans to begin testing GOSIP products in the near future, is working to earn accreditation from the National Institute for Standards and Technology (NIST) as a GOSIP-accredited lab.

"The abstract test suites that cover the accreditation process are under evaluation by NIST," Hudson said. "We believe the in-

(continued on page 10)

COS' Hudson lays out group's priorities

continued from page 9

formation we've submitted will be accepted."

Concerning its COS Mark Program, the organization said it hopes to accredit vendor labs to perform OSI compliance testing.

Under that scenario, COS will review the vendors' tests and award COS Marks based on those results. This would be a radical departure from its original intentions, which were to set up independent test centers.

On another OSI front, COS is working with the Japanese group Promoting Conference for OSI (POSI) and the European organization Standards Promotion and Application Group (SPAG) to orchestrate development of a common set of OSI test systems.

Rather than having a vendor recertify its OSI gear in foreign countries, COS hopes to establish a single set of test procedures that would enable products previously granted OSI certification in one country to be cleared for use in another without extensive retesting.

The three groups will push user organizations and government agencies to support this effort.

"Our mission is one-stop testing," Hudson said.

As part of their effort, COS, POSI and SPAG are also planning what is called the Open Integrated Tool Set. Under this program, OSI test systems already under development would be adopted for use in North American, European and Asian markets, rather than reinventing the same application for each region.

In addition, COS, POSI and SPAG will divide up responsibility for developing the remaining test systems.

The Open Integrated Tool Set is scheduled to be released in September.

Looking to ISDN

Hudson said that COS intends to fund development of a COS Mark Conformance tester for ISDN that should be released during the first quarter of 1991. IDACOM Electronics, Ltd., based in Edmonton, Alberta, is "providing the engine" for the ISDN conformance tester, Hudson noted. "They will provide a tester that conforms to the abstract test suites that we are provided out of the North American ISDN Users Group."

Hudson said the group is scheduled to release the abstract test suites by this October. The test system will gauge conformance of carrier services to the ISDN Basic Rate Interface. It will also test a variety of hardware interfaces to those services.

More user voice

Of major importance for COS this year is the planned merger of the MAP/TOP Users Group into COS. Details are scheduled to be finalized in May. The melding of MAP/TOP Users Group members into COS would greatly add to the user representation COS now has. COS comprises roughly 16 users and about 38 vendor companies. The merger will add such users as Aetna Life and Casualty Co., Aluminum Co. of America, Bechtel Corp., Deere & Co., General Dynamics Corp. and General Foods, Inc.

COS "has been largely a vendor organization up to now," said Michael Kaminski, manager of the MAP program at General Motors Corp.

Kaminski said that joining COS would be a good opportunity for users to work in partnership with vendors.

"It gives us a substantial user base to push our requirements for communications," he said.

COS' 1990 priorities

- ☐ Vie for government and industry contracts for public domain research and consulting.
- ☐ Receive official status as a GOSIP-accredited lab from the National Institute for Standards and Technology.
- ☐ Sponsor development of a COS Mark Conformance Test System for ISDN for release by the first quarter of 1991.
- ☐ Finalize arrangements by May to fold MAP/TOP members into COS.
- ☐ Accredit vendor labs for COS Mark tests.
- ☐ Farm out actual development of conformance test products.
- ☐ Work with Europe's Standards Promotion and Applications Group and Japan's Promoting Conference for OSI group to coordinate development of the "Open Integrated Tool Set" for OSI testing by September.

SOURCE: CORPORATION FOR OPEN SYSTEMS INTERNATIONAL, MCLEAN, VA.
GRAPHIC BY SUSAN J. CHAMPENY

Industry Briefs

continued from page 9

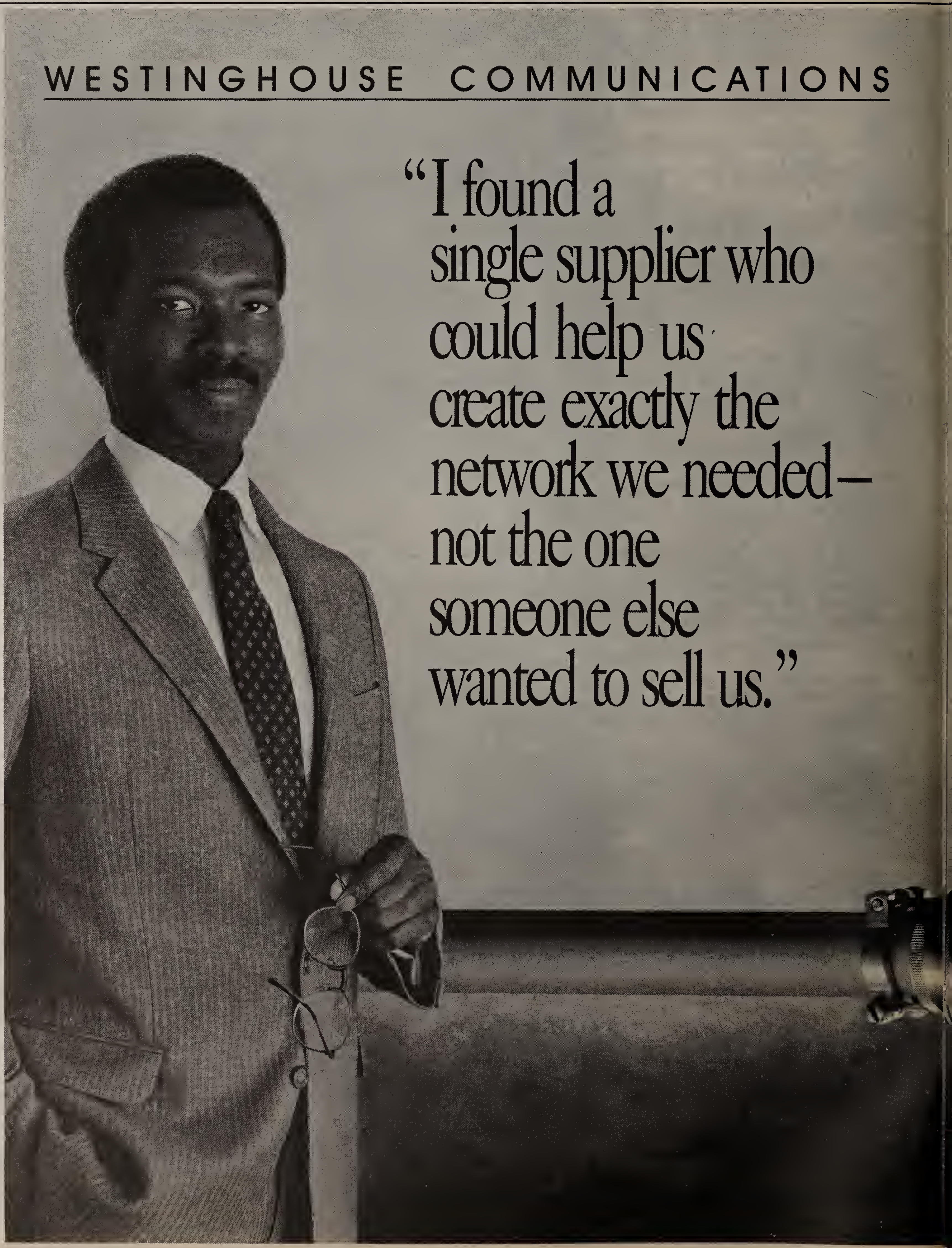
sale of FastPath products.

Novell also said it signed an agreement with **Dayna Communications, Inc.** to supply Apple LocalTalk interfaces for Novell's NetWare for Macintosh. Dayna's DL2000 and DL/2 LocalTalk adapters will replace Novell's NL1000 and NL/2, respectively.

The DL2000 and DL/2 will provide Macintosh users with full access to all NetWare features, including print spooling and administration.

The **North American Telecommunications Association** last week announced support for an AT&T motion that would require public disclosure and scrutiny of certain regional Bell holding company investments.

In a March 16 motion filed with the U.S. District Court in Washington, D.C., AT&T asked the court to establish a procedure in which outside parties would be informed in advance whenever an RBHC moves to invest in firms engaged in manufacturing or other lines of business prohibited to them under the Modified Final Judgment.


WESTINGHOUSE COMMUNICATIONS
"I found a single supplier who could help us create exactly the network we needed—not the one someone else wanted to sell us."

Treasury Dept. bans C&P from bidding

continued from page 9

that we have made a mistake, a hearing will be held."

The procurement, valued at $60 million to more than $100 million, has been a bitterly contested contract and a source of intense struggle since the original request for proposal for the system was issued in 1985. The Treasury Department twice awarded the contract to AT&T, but the General Services Administration's Board of Contract Appeals twice upheld protests from C&P Telephone claiming that the ISDN handsets AT&T bid were not commercially available.

Now, Bell Atlantic said, the Treasury Department is turning that claim against C&P Telephone in the latest round of bidding, a move calculated to eliminate the carrier from the running.

Murray called the Treasury Department's suspension letter "part of a continuing effort by lower level employees to award the contract to AT&T." Murray noted that AT&T was never suspended from government bidding when the GSA Board of Contract Appeals decided AT&T equipment and software were commercially unavailable in the earlier bids.

Although C&P Telephone and Bell Atlantic are now shut out of new government bidding, other Bell Atlantic operating companies and subsidiaries that have existing government contracts will not be affected by the Treasury Department's action. ◻

NET blames 4Q woes on sales irregularities

By Bob Brown
Senior Editor

REDWOOD CITY, Calif. — Network Equipment Technologies, Inc. (NET) last week cited improprieties regarding certain orders and shipments, and said the actions will have a negative impact on fourth-quarter results.

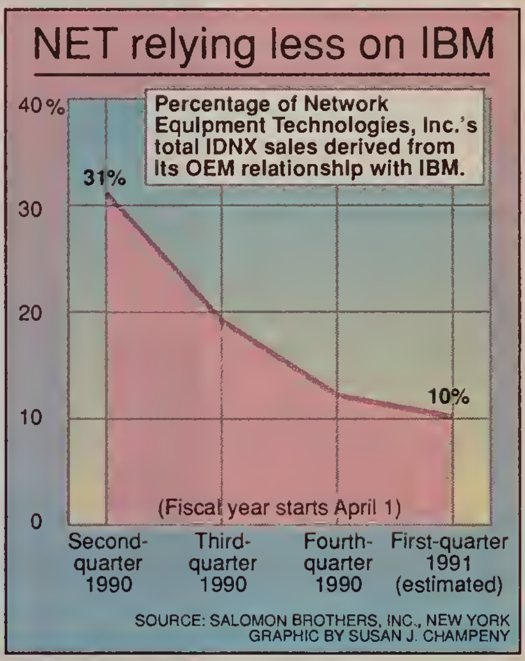
NET said it expects to post fourth-quarter revenue of $44 million, a smaller-than-expected increase over the $38.8 million in revenue reported for last year's fourth quarter. NET reported revenue of $52 million in its fiscal third quarter.

In addition, the company said it expects to report earnings per share of 10 cents for the quarter, down sharply from the earnings of 33 cents per share it reported for the corresponding quarter a year ago.

The sales improprieties, which led to a reduction in profit margins and expected revenue, were described by an NET spokesman as the result of "overaggressiveness in one region." NET would not elaborate further, but analysts said that in a conference call with NET President Bruce Smith, he attributed it to salespeople offering unauthorized discounts to customers.

Separately, NET disclosed that it is investigating an order that it termed as "not valid." Analysts said the probe centers on a product shipment made to a customer that never placed an order. NET would not disclose the name of the customer. Analysts pegged the invalid order to be worth between $3.5 million and $4.5 million.

Smith told analysts the problems were localized and were cleared up by shifting some personnel.


NET relying less on IBM

SOURCE: SALOMON BROTHERS, INC., NEW YORK
GRAPHIC BY SUSAN J. CHAMPENY

In a related move, Roger Hobbs resigned as NET's vice-president of national marketing. He was replaced by Craig Tysdal, previously NET's vice-president of product marketing.

NET's revelations last Monday sent the company's stock tumbling almost 25% on Monday to close at $15⅛.

"People have such high confidence in NET's management team," said George Kelly, vice-president at Morgan Stanley & Co., Inc. in New York. "I see their problems as nonrecurring."

The announcements followed an admission two weeks ago by NET that its results for the fourth quarter, ended March 31, would be "significantly less than anticipated," due in large part to a drop in sales of its products through IBM.

Michel Guite, vice-president at the investment firm of Salomon Brothers, Inc. in New York, estimated that Integrated Digital Network Exchange (IDNX) sales by IBM fell from about 31% of NET's total IDNX sales for the first quarter of fiscal 1990, to about 12% for the fourth quarter, and are expected to stabilize at about 10% (see graphic).

This drop-off should be offset by an expected jump in NET's direct sales from some $33.1 million in the just-completed fourth quarter to roughly $48 million predicted for the fourth quarter a year from now, Guite said.

NET expects to report final fourth-quarter results on April 25. ◻

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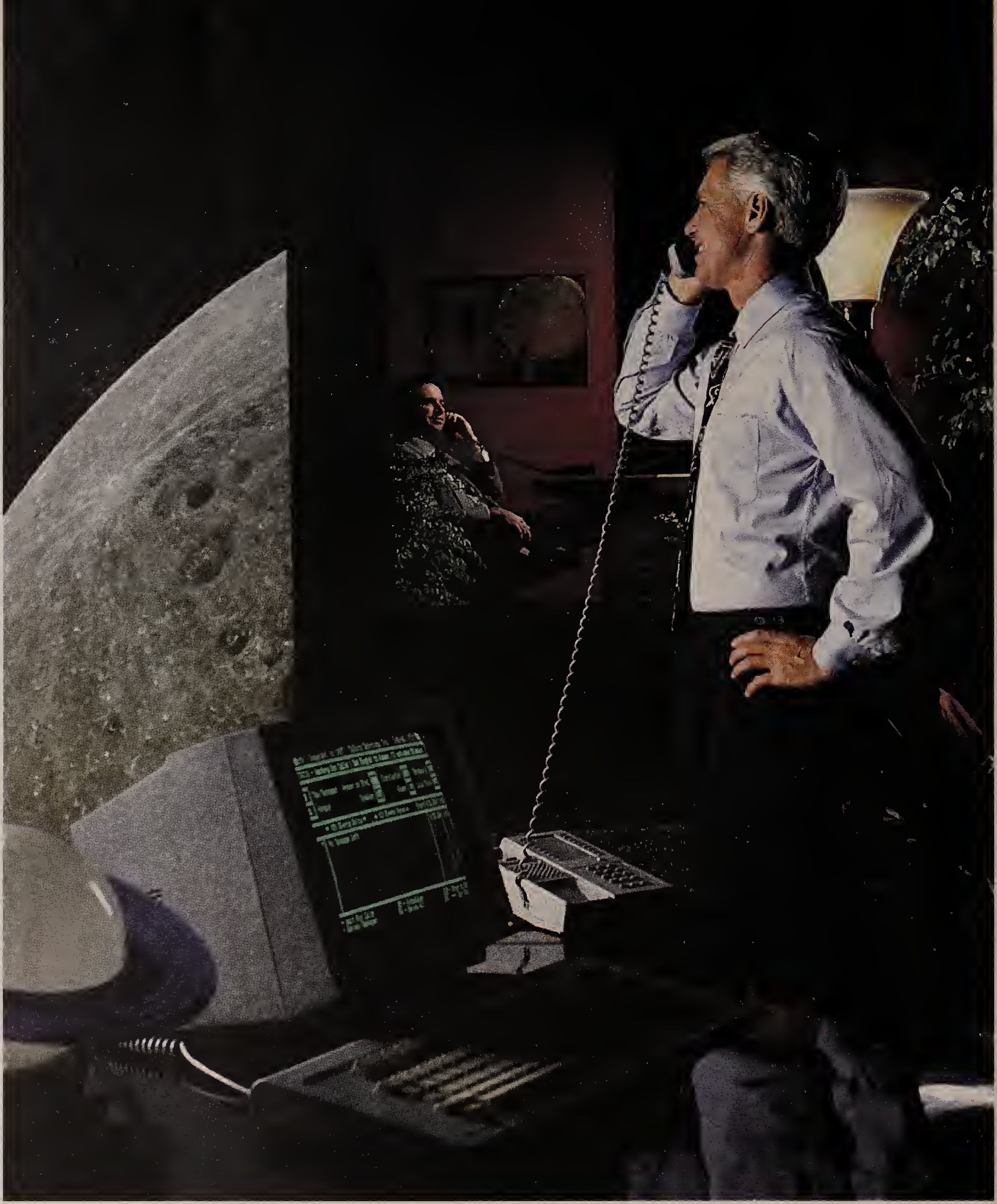

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C. Joseph Atteridge
President
American Airlines
Direct Marketing Corp.
A Dallas-based subsidiary of
American Airlines, Inc.

Carrier Watch

Indiana Bell Telephone Co. recently announced availability of four Custom Local Area Signaling Services (CLASS) in the Indianapolis metropolitan area. The services are automatic callback, call screening, distinctive ringing and repeat dialing. In **Ameritech's** five-state region, Indianapolis is the second city, after Cleveland, where CLASS is available.

Automatic callback dials the number of the last call received, even if the phone was not answered. If the number is busy, the phone redials the number for up to 30 minutes and sounds a special ring when and if the call can be completed. Automatic callback costs $3.75 a month per line.

Call screening enables subscribers to block calls from certain telephone numbers. People dialing from these numbers receive a message saying that the caller is not receiving calls at that time. The subscriber's telephone does not ring. Call screening costs $4.50 a month per line.

Distinctive ringing enables subscribers to program the phone system to sound a different ring for calls from each of up to 10 telephone numbers. It costs $3.75 a month per line. Repeat dialing automatically redials a busy number for up to 30 minutes. A special ring announces when the call can be completed. Re-

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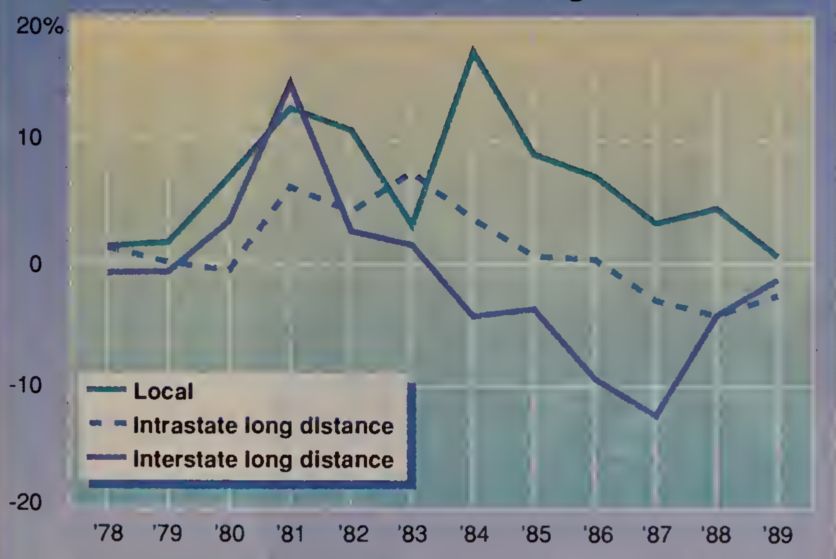
Prevailing tariff winds

Annual rate of change for local and long-distance service charges



Rates include monthly service charges, leased equipment, installation, taxes and subscriber line charges.

GRAPHIC BY SUSAN SLATER SOURCE: FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON, D.C.

Centrex group champions need for caller ID services

Stresses benefits to assuage privacy concerns.

By Bob Wallace
Senior Editor

NOVI, Mich. — In the strongest show of user support for caller identification service to date, the National Centrex Users Group (NCUG) recently sent a position paper explaining the need for the service to state public service commissions.

The 715-member company NCUG hopes that promoting the benefits of caller ID will help placate privacy advocates concerned about the deployment of the service option.

"We're the first major users group to take a stand on caller identification, and we think others will follow," said NCUG Vice-President Daniel Gonos, store systems director for Domino's Pizza, Inc. in Ann Arbor, Mich.

"Those who oppose caller ID have been very vocal and aggressive in their efforts, but users that advocate the service have been relatively quiet, until now," Gonos said.

> NCUG argues that most concerns about privacy can be overcome by proper regulation.
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With caller ID, the telephone number of the calling party is displayed to the called party before the call actually arrives. Although the controversial service promises much to businesses, opponents argue the service compromises caller privacy.

NCUG argues in its paper that most consumer concerns about privacy can be overcome by imposing proper regulation. The group suggested that the phone numbers of customers with unlisted numbers not be forwarded to the called party and that businesses say in phone listings that they use the service.

> NCUG "stands opposed to the blanket provision of blocking services on demand."
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According to NCUG, "Adoption of the technology is inevitable and implementation under the guidance of prudent, but not excessive, regulation should take place as soon as possible."

Anti-blocking

The group, for example, does not want to see telephone companies being forced to offer a blocking option to users who want to remain anonymous. NCUG "stands opposed to the blanket provision of blocking services on demand since this defeats many of the security advantages of the service," the paper said.

(continued on page 16)

Long-haul price flux costs users money

Report says users must reevaluate options every six months to capitalize on changing carrier deals.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Small companies and branch offices of larger corporations that procure their own services should review their long-distance options every six months to capitalize on carrier deals, according to a study by a consumer group here.

The Telecommunications Research and Action Center (TRAC), a nonprofit group that tracks communications rates, said users are not reevaluating their buying plans often enough to keep pace with the market.

"As a result of price changes and the introduction of new [discount] plans, none of the plans that were the least expensive six months ago continue to be the best buys," said David Wagenhauser, executive director of TRAC.

In addition to the rapid rate of change in telecommunications pricing, users must also sort through a huge volume of information. "Unfortunately, businesspeople today are besieged by conflicting [advertisements], pushy salesmen and all-promising glossy brochures and other lures that do little but create confusion," the report said.

Despite the effort involved, users that carefully monitor their carrier's discount plans and those offered by rival carriers can save as much as 20% on telecommunications bills, according to TRAC.

The TRAC report analyzes services for business customers spending between $200 and $8,000 per month. According to the group, all three carriers have introduced virtual WATS service plans that offer savings over more traditional plans.

For example, virtual WATS services are available over standard 1+ dialing access lines that do not require special installation. Traditional WATS lines, on the other hand, which require special installation, can be used only for WATS and carry a monthly line charge.

Virtual WATS services are also appealing because they do not typically carry a termination charge, making it inexpensive to

(continued on page 16)

WASHINGTON UPDATE

BY ANITA TAFF

Users, carriers support MFS plan. Users and alternative carriers banded together recently to support a request from Metropolitan Fiber Systems, Inc. (MFS) to open the local exchange to competition in switched access services. MFS filed a petition with the Federal Communications Commission last year asking that it be allowed to collocate equipment in central offices to consolidate and route switched traffic to long-haul carriers. MFS also asked that access services be unbundled so that alternative carriers could buy only what they needed.

The regional Bell holding companies have expressed negative opinions about the proposal, claiming it would allow alternative carriers to skim off the most profitable business accounts from the local carriers. If the FCC allows this, the local carriers say they could be forced to raise rates for residential users to remain profitable. But MFS and users filed comments disputing that argument. MFS commissioned an economic analysis it says shows that alternative carriers would only be competing for a percentage of traffic growth in cities and wouldn't cut into the RBHCs' current revenue base.

FMR Corp., parent company of Fidelity Investments in Boston and part owner of an alternative carrier, Boston-based Teleport Technologies, Inc., claims that opening the local exchange to competition will drive prices down. Finding in favor of MFS' request "would further the public interest by loosening the limiting effects of the local bottleneck and by providing needed reliability, improving quality, eliminating unnecessary costs and increasing flexibility of telecommunications services," FMR stated in its filing.

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The Connectivity Leader

Volume buying plan helps AT&T win PBX pact, keep other business

By Bob Wallace
Senior Editor

LOS ANGELES — AT&T's volume purchasing plan for the Catholic Hospitals Association (CHA) helped the carrier land a contract for a 1,200-line Definity Generic 2 PBX at the Queen of Angels/Hollywood Presbyterian Medical Center here and retain the center's long-distance business.

A CHA-distributed booklet detailing its arrangement with AT&T arrived in the center's mailbox at the eleventh hour and saved AT&T, which was about to lose the private branch exchange project to NEC America, Inc. and the center's outbound WATS business to MCI Communications Corp. or US Sprint Communications Co.

Surprisingly, the chance mailing of the booklet, not the AT&T account team bidding on the business, alerted the medical center to the volume purchasing plan.

But Sonja Green, director of telecommunications for the medical center, said she was glad to hear the news, regardless of its source. "It was an incredible stroke of luck for us," Green said.

The center was ready to award the business to NEC, which had underbid five rivals by offering a NEAX 2400 switch for $300,000.

The CHA bulk buying agreement, however, slashed a third off the cost of the Definity — which AT&T had offered for $500,000 — and gave the center an additional 5% discount for moving from a competitor's switch, an overtaxed NEC NEAX 22F. "We couldn't have afforded the [Generic] 2 any other way," Green said.

Even with the CHA discounts, the Definity was more expensive than the NEAX 2400, but Green rated the AT&T switch higher, primarily because of its self-diagnostic capabilities. Other bidders included Centel Business Systems, which bid a Northern Telecom, Inc. SL-1, and Pacific Bell, which offered digital Centrex.

The medical center signed the contract with AT&T in December and cut over the Definity without event on March 27. The Generic 2 now serves 1,100 stations, and at some point in the future, it will be used to switch data, Green said.

Medical center employees are using basic PBX features, including call waiting, call forwarding, call hold, conference calling and speed dialing, according to Green.

The medical center put the Generic 2's battery backup system to the test three days after the switch was cut over when the hospital lost power. "The Definity just kept on running," Green said. "And that fact won it praise from our employees."

On the long-distance side, MCI and US Sprint were attempting to lure the medical center away from AT&T, its longtime primary carrier. But the arrival of the CHA booklet, which offered members a 10% discount on AT&T long-distance services, again spelled trouble for its rivals.

"After taking a good look at the CHA discount, we decided to stay with AT&T," Green said.

Long-haul price flux costs users money

continued from page 13

switch carriers, the report said.

Another advantage of virtual WATS services is that they are billed in six-second increments rather than rounded up to the next full minute like many standard business calling plans. Businesses that primarily make calls under six minutes in length benefit most from six-second increment billing, TRAC said.

TRAC's report compares rates of Allnet Communications Services, Inc., AT&T, Cable & Wireless Communications, Inc., MCI Communications Corp., Metromedia/ITT and US Sprint Communications Co. All calls included in the comparison were between five and seven minutes in length.

TRAC's report said that Metromedia/ITT's new discount plan for virtual WATS, dubbed Six Second Billing, moved from one of the most expensive services six months ago to the least expensive now.

Metromedia/ITT's plan costs about 20% less than its most expensive competitor, AT&T. For example, for customers spending about $700 per month on AT&T's Pro WATS — the most expensive plan in the category — Metromedia/ITT's plan would cost 14%, or $656, less.

As monthly spending increases, the discounts get bigger. For customers spending $1,700 per month on AT&T, Metromedia/ITT's plan costs 16% less; for customers spending $3,200 per month, the savings is 17%; and for customers spending more than $6,200 per month, the savings is 15% over AT&T.

> MCI generally ranked as the third least expensive, followed by Cable & Wireless' and Allnet's plans.

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After Metromedia/ITT, the next least expensive service was US Sprint's Dial 1 WATS, except for customers spending between $3,200 and $6,200 per month. At that spending level, MCI's Prism Plus was the least expensive service.

MCI generally ranked as the third least expensive, followed by Cable & Wireless' Focus II and Focus III plans, and Allnet's Premier Elite and Vantage plans.

In addition to price differences, the various virtual WATS plans are often structured differently in terms of volume discounts and charges for features such as account codes, which are dialed by corporate callers for identification purposes. TRAC said AT&T recently added an account code feature, at no charge, to its Pro WATS plans. This brings the carrier in line with competitors, all of which offered account codes previously, the report said.

Three of the carriers, AT&T, MCI and Allnet, offer account codes at no charge to users. Metromedia/ITT and US Sprint each charge $5 per month for 99 codes. Cable & Wireless has a graduated charge depending on the amount of codes used. Under its Focus II plan, the carrier charges $25 per month for the first 250 codes and $15 per month for each additional 250 codes. Under its Focus III plan, Cable & Wireless charges $15 per month for each group of 100 codes used.

Carrier Watch

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peat dialing costs $3.50 a month per line.

The Williams Companies, Inc., a $3.9 billion corporation known for its pipeline transportation of natural gas and petroleum products, is getting increasing recognition for the performance of its long-haul subsidiary **Williams Telecommunications Group, Inc. (WTG).**

WTG, one of five units of The Williams Companies, accounted for 25.5% of its parent's profits in 1989. WTG outearned Williams Natural Gas Co. (19.9%), Williams Pipe Line Co. (15.4%) and Williams Gas Marketing Group, Inc. (2.6%). Only Northwest Pipeline Corp. outperformed WTG, netting 36.6% of the firm's earnings.

WTG transformed itself from a regional carrier to a nationwide carrier last year with the acquisition of **Lightnet** for $365 million in April 1989. Lightnet operated a 3,500-fiber-mile network serving 35 cities. WTG operates a nationwide network with 11,400 route miles — 10,500 fiber route miles and a 900-mile digital microwave system.

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Centrex group champions caller ID

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Sherwin-Williams Co., a large Centrex user and NCUG member, supports the group's stand.

"We do not feel that the objections to caller [ID] are legitimate enough to restrict or block delivery of [ANI]," said John LeSueur, corporate manager of telecommunications for the Cleveland-based company.

Nonetheless, NCUG strongly recommends blocking for certain customers in sensitive positions, including shelters for battered spouses, community mental health workers and undercover police officers. Identifying these callers could endanger them.

The NCUG paper went on to argue that many groups, ranging from residential customers to medical facilities, stand to benefit from caller ID services.

Caller ID "provides customers plagued by annoyance calls with the ability to identify the source of the problem and aid appropriate enforcement officials to eliminate it," the paper said.

NCUG said caller ID provides the ability to screen calls and return calls without answering them. "This provides an advantage both to the called party, since discretion is preserved, and the calling party, since a message unit is not incurred to leave a message," the paper said.

"I have the right to know who's calling me and, with caller ID, I can screen out the five to ten calls a week I get from people trying to sell me things I don't need," LeSueur said.

NCUG also argued that caller ID "can serve as an inexpensive substitute for Enhanced 911 service for public safety agencies and can provide delivery [companies] with a means to improve accuracy of orders and to control potentially fraudulent orders."

Domino's Gonos said the company's 5,000 stores nationwide received 462,000 undeliverable orders in 1989. The bad orders — most of which are fraudulent — cost the company $4.62 million. With caller ID, an order taker could match the ANI against the residential telephone number in the customer's profile. If the two don't match, Domino's could recheck or hold the order.

Two Domino's stores in New Jersey have realized a 90% decrease in undeliverable orders in the six months since they began using caller ID, Gonos said. "A big part of that decrease is attributable to [automatic number identification]."

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DATA COMMUNICATIONS

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Worth Noting

"Network management should be an integral part of planning a network architecture. All too often, it's an afterthought."

Jerry McDowell
Communications consultant
The Meta Group
Carmel, Calif.

Data Packets

The Boston Globe last week announced plans to install a three-node StrataCom, Inc. IPX FastPacket T-1 network this summer that will eventually include the frame relay interface now under development by StrataCom, Digital Equipment Corp. and Vitalink Communications Corp.

The Boston Globe network will support voice and data among the paper's three Massachusetts sites, which include its editorial office, customer service center and production facility. *The Globe* uses DEC VAXes to drive its production machines and Vitalink bridges to link Ethernets at the three sites.

StrataCom is developing frame relay interfaces, which provide a high-speed data link to a net backbone, for its IPX with both of those vendors.

The telecommunications and information management committee of the **Securities Industry Association (SIA)** has recommended that its members use Systems Center, Inc.'s Network DataMover VTAM software for trading-related batch data transmissions on transaction processors from Tandem Computers, Inc., Digital Equipment Corp. and other vendors.

The SIA made the recommendation because the software runs on a range of hosts and has superior security features, according to Gary Hegedus, vice-president of systems services at New York-based Shearson Lehman Hutton, Inc.

Retailer peddles software linking POS terminals, host

Package lets stores upload sales, inventory data.

By Jim Brown
Senior Editor

HIGHLAND HEIGHTS, Ohio — Retail giant Cole National Corp.'s network and data processing subsidiary recently said it will begin selling internally developed software that links point-of-sale terminals to retail store data centers.

Cole Management Services Co. will market its Remote Data Capture software, which will enable POS terminals in remote stores to call into an IBM mainframe via CompuServe, Inc.'s X.25 public packet network to upload sales and inventory data and download price changes.

With the software, retailers will no longer have to program a host to poll each store at night via dial-up links.

The move is the latest step in Cole National's effort to turn its MIS organization into a moneymaking operation. The company, formed in early 1989, currently provides network and data processing services for several of its parent company's retail outlets, including Child World, Inc., Things Remembered, Cole Key Corp. and Cole Vision Corp., which operates the optical department in Sears, Roebuck and Co. stores.

In addition to marketing its own software, Cole Management is offering network consulting services and reselling excess capacity on its AT&T Software-Defined Network (SDN). "Our charter is to go to the outside world and bring in revenue for our parent," said James Haklik, a telecommunications manager at the company.

Point of capture

Currently, the Remote Data Capture software runs on IBM 3684 or IBM Personal Computer-based POS terminals in about 500 Cole National stores. Those POS terminals are also equipped with modems operating at 1,200 and 2,400 bit/sec. About 350 other Cole National stores will soon be equipped to support the software.

At a specified time each night, the POS terminals dial into the nearest CompuServe node and upload sales and inventory data. CompuServe aggregates traffic from the stores and transmits it over a dedicated 9.6K bit/sec and a 14.4K bit/sec leased line to an IBM 3725 front-end processor here running Network Control Program Packet Switching Interface software. The dedicated links can support up to 30 simul-

(continued on page 19)

Corporate Systems preps to build 120-site VSAT net

By Jim Brown
Senior Editor

AMARILLO, Texas — A risk management services provider recently announced that it will build a 120-site VSAT network that will reduce the cost of linking clients to an insurance risk management system here.

The new very small aperture terminal network will also deliver data to clients faster than existing AT&T leased lines and allow the company, Corporate Systems, to add new sites more quickly to the network.

"[The VSAT network] is going to keep our costs down over the years, provide faster data transmission and enable us to install new sites on the net quicker than AT&T can put in leased lines," said Gary Huff, network operations manager at the company.

Corporate Systems runs IBM mainframe applications that analyze a company's insurance claim records and insurance policies. Clients linked to its host can access recommendations that will help them trim insurance costs.

The company recently signed a $3.5 million contract with Houston-based Nova-Net Communications, Inc. to install VSATs at client locations that currently have leased lines. Sites served by dial-up facilities will be unaffected by the VSAT network.

Currently, 286 clients are linked to Corporate Systems' mainframe via 4.8K or 9.6K bit/sec analog leased lines. Approximately 1,000 smaller clients are linked to the company via dial-up lines at speeds up to 2,400 bit/sec.

Warren Cornelius, Corporate Systems' director of telecommunications, said he expects the VSAT network will slash costs from $2.5 million to $1.5 million a year. Once the VSAT equipment is paid off in five years, VSAT service costs will range between

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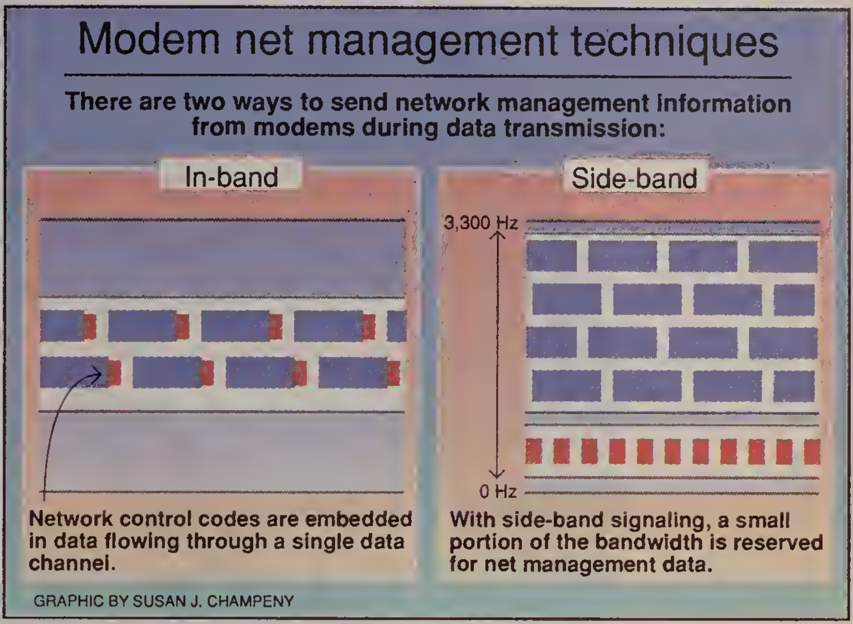
Modem net management techniques

There are two ways to send network management information from modems during data transmission:



Network control codes are embedded in data flowing through a single data channel.

With side-band signaling, a small portion of the bandwidth is reserved for net management data.

GRAPHIC BY SUSAN J. CHAMPENY

Theories vary about modem net mgmt.

Whether users opt for side channel or inband methods, they must contend with shortcomings.

By Paul Desmond
Senior Writer

Although there has long been debate over the merits of competing modem network management techniques, users would be wise to consider the differences as they install digital links in some portions of their networks.

No matter which technique network managers adopt for use in their networks, they will be forced to deal with drawbacks.

The modem management scheme subscribed to by most vendors, called the side-channel technique, requires users to employ additional devices to support the transmission of modem net management data through the digital portions of their nets.

Another technique favored by IBM to manage its modems, called inband signaling, supports the transmission of net management data through digital links. Opponents argue, however, that it raises the risk of interrupting the primary data transmission.

Transmission techniques

The inband technique subscribed to by IBM and a handful of other vendors that want to operate in NetView-controlled networks calls for mixing net management data with regular user data over a single line.

The other school of thought is to establish a second low-speed data channel outside the frequency spectrum used as the regular data channel. This sideband is established somewhere on the low end of the usable frequency spectrum, typically between about 300 and 500 Hz, and uses only about 150 bit/sec of bandwidth or less (see graphic).

"Out-of-band was a good idea when everything was analog, but it takes some monkeying around to get it to work when you're trying to migrate toward digital circuits," said James Herman, principal with Northeast Consulting Resources, Inc. in Boston.

That's because when an analog line is digitized, the net management data will be merged with the regular data flow in an incomprehensible pattern, if indeed it gets digitized at all.

Therefore, a user with remote locations supported by analog lines and modems that must feed data from those sites into digital links has to devise a way to accommodate the sideband network management data. One way to do that is to use a multiplexer to accept net management data from a number of modems and multiplex it over its own channel on the digital link, separate from the other user data.

None of that is necessary with modems that support the inband technique because network management data is interspersed with all other data and is designated by special headers.

But proponents of the sideband technique say the inband scheme interrupts the flow of user data through the modem. That means the modem cannot simultaneously support the transmission of user data and net management data.

"That's an argument our competitors use," said Francois de Saint Michel, product planner of connectivity nodes for IBM in La Gaude, France. "It's either a lie or they don't understand how it works."

According to de Saint Michel, IBM's Network Control Program (NCP), which runs in its front-end processors, will send a com-

(continued on page 19)

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Theories vary about modem net mgmt.

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mand at a user-defined interval — typically around 20 minutes — to check line conditions. It takes about one second to send the command and receive an acknowledgment, an interruption that is imperceivable to the user, he said. For other types of network management functions such as a loop-back test, an IBM modem would have to interrupt the user, but so would a modem managed via the sideband technique due to the nature of the test.

Vendors that subscribe to the sideband technique also claim that their method enables net management data to get through under adverse line conditions.

"If you look at a communications line, better than 90% or 95% of the time, the deterioration starts at the high end of the frequency spectrum and works its way to the low end," said Bill Victoria, director of network management systems marketing at General DataComm Industries, Inc. Since sideband network management data rides at the low end of the frequency spectrum, it can survive poor line conditions longer than inband net management data can. The latter type of data rides in the middle of the spectrum, Victoria said.

Sideband net management data is also traveling at a relatively slow speed, typically less than 150 bit/sec, said Tom Hayes, director of modem marketing at Codex Corp. Therefore, it uses a simple modulation technique that can withstand poor line conditions. "You'd almost have to lose the line to disrupt it," Hayes said.

Supporters of the inband technique counter that their scheme provides a more accurate representation of the line conditions to which the user's data is subjected. Under the side-channel scheme, the net management data is reporting on the conditions of the side channel, not the main data channel, said Karl Nordling, vice-president of marketing for Nokia Data Communications Corp., which recently introduced a modem that supports the inband technique.

That means it is possible to get an indication of an outage because the side channel or the equipment that creates the side channel is impaired, even though the primary channel is working, Nordling said.

One area that neither technique addresses is standards compliance because Open Systems Interconnection network management standards do not specify the manner in which modems should talk to one another or to a modem network management system.

"It'll be a long time before we get to that level," Victoria said. "At this point, [we think] it's better left the way it is," with each vendor using proprietary management protocols.

Corporate Systems to build VSAT net

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$600,000 and $700,000 a year.

Additionally, the VSAT network will improve response times between Corporate Systems' host and IBM 3174 or 3274 cluster controller-attached terminals in client offices. Response times are expected to drop from the current level of six seconds to between two and three seconds.

VSATs at client sites will relay data via satellite to a Nova-Net shared hub in Houston at 56K bit/sec. Nova-Net concentrators at the hub will multiplex data from up to 30 VSATs onto a single 56K bit/sec data channel on a T-1 circuit. That T-1 circuit links the hub and Corporate System's data center, which is some 650 miles away.

Cornelius said response times will dictate how many sites are actually put on each channel. "If we get past four seconds, that channel will be considered saturated and the data will be routed to another channel."

Currently, Corporate Systems has a pilot test linking VSATs in Amarillo and Chicago to the Houston shared hub. A 56K bit/sec AT&T Dataphone Digital Service circuit links the shared hub to the data center. VSATs will be installed at 20 sites by June, and all 120 sites are expected to be operational by the end of 1991.

Retailer peddles software

continued from page 17

taneous calls. However, Haklik said, "we average around 22 simultaneous calls during our peak period."

Previously, six teams of automatic calling units and modems attached to the front-end processor established 1,200 bit/sec links to POS terminals in the company's stores. This limited Cole Management to reaching six sites at a time.

Haklik said Cole Management developed the software to increase the number of stores that can be reached each night. "With polling, the number of POS terminals that are not contacted each night is higher than with Remote Data Capture."

The software has also helped Cole National reduce costs. Polling each store via SDN dial-up circuits costs about 14 cents per minute. With the Remote Data Capture software and CompuServe's X.25 net, that cost drops to between 9½ and 10 cents a minute.

Pricing for Remote Data Capture is broken down into two components. RDC/PC, which runs on the POS devices, costs $295 for each POS device for installations with up to 55 locations. Cole National dropped the price of the POS software to $245 per POS device for installations that support more than 550 devices.

RDC/Host, which resides on IBM System/370 class mainframes, is priced at $80,000. It costs $100,000 for users supporting more than 550 POS devices.

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LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

"The Lotus/Novell merger certainly shakes Microsoft to the core. As if it didn't have enough problems with lackluster OS/2 sales and LAN Manager's slow start, the company now has to face a $1 billion industry giant whose main purpose is to sink Microsoft."

Mary Modahl
Analyst
Forrester Research, Inc.
Cambridge, Mass.

Netnotes

Wang Laboratories, Inc. last week demonstrated imaging applications running under Novell, Inc.'s NetWare network operating system on Ethernet and 16M bit/sec token-ring networks at the 1990 Association for Information and Image Management conference in Chicago.

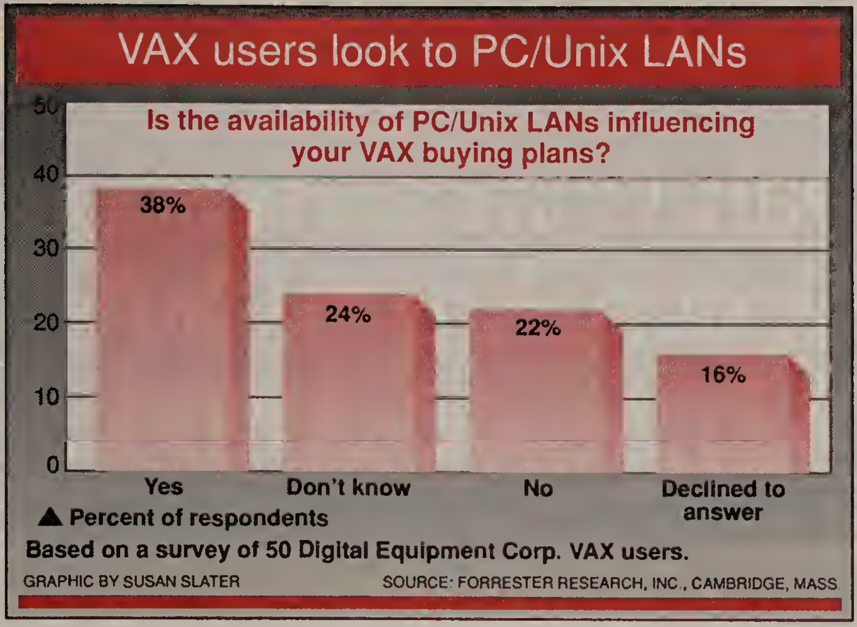
The local-area networks were linked to a Wang VS minicomputer running Wang's Integrated Image Systems software, according to David MacWhorter, director of worldwide image marketing at the company. The software previously supported only workstations linked directly to the VS minicomputers.

Wang also demonstrated image transfers between VSs over an Integrated Services Digital Network Basic Rate Interface (BRI) connection. MacWhorter said Wang will be shipping token-ring products by late summer.

The software currently supports BRI transmission between VSs.

Nuvotech recently announced the availability of NetPack 12, the company's new LocalTalk network package that allows users to connect as many as 12 nodes on an AppleTalk network using unshielded twisted-pair tele-

(continued on page 23)



VAX users look to PC/Unix LANs

Is the availability of PC/Unix LANs influencing your VAX buying plans?

▲ Percent of respondents

Based on a survey of 50 Digital Equipment Corp. VAX users.

GRAPHIC BY SUSAN SLATER

SOURCE: FORRESTER RESEARCH, INC., CAMBRIDGE, MASS.

Racal InterLan pares price of 16-bit Ethernet adapter

Low cost could give it edge over competitors.

By Laura DiDio
and Walter Sweet
Network World Staff

BOXBOROUGH, Mass. — Racal InterLan last week dropped the price of its NI6510 16-bit Ethernet interfaces 20% to $395, the same price as its older eight-bit Ethernet adapters.

The NI6510 16-bit interface is a bus master adapter for IBM Personal Computer ATs and supports both thick- and thin-wire Ethernet.

"The vast majority of systems being networked today are 16-bit PC AT-class machines, but artificially high prices on 16-bit adapters prevents many users from buying them," said Frederic Gluck, Racal InterLan's product line manager of personal computer products.

The $395 price tag on the NI6510 makes it one of the least expensive 16-bit interfaces on the market today. The average wholesale volume price of 16-bit Ethernet bus master adapters is currently around $430, and the average list price is around $475, according to Doug Gold, manager of communications industry research for local-area networks at International Data Corp. in Framingham, Mass.

The $395 price tag on the NI6510 makes it one of the least expensive 16-bit interfaces.

▲▲▲

Novell, Inc.'s 16-bit adapter, the NE2000, currently lists for $495; BICC Data Networks, Inc.'s comparable offering also costs $495, and Tiara Systems, Inc.'s 16-bit adapter costs $595.

Racal InterLan's prices could give it an edge over its rivals, Gold said. "There's no question that Racal InterLan's aggressive pricing is going to help it win a lot of new customers. The NI6510 has significantly better performance and lower data error rates than comparable adapters."

Racal InterLan's agressive pricing is going to help it win a lot of new customers.

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Declining prices are being driven by increased competition and lower manufacturing costs in the Pacific Rim, where most of the adapters are made. "We're expecting that adapter prices will fall 10% to 15% per year through 1993. The 16-bit bus master cards will be the last ones to experience the price declines, but they will also follow the same downward trajectory," Gold said.

Racal InterLan also introduced software drivers that allow the NI6510 adapter to be used with additional network operating systems. They include Novell's NetWare 386 and NetWare 286; Apple Computer, Inc.'s Macintosh Value Added Process; and Digital Equipment Corp.'s DECnet DOS/Personal Computer System Architecture.

For more information, contact Racal InterLan at 155 Swanson Road, Boxborough, Mass. 01719, or call (508) 263-9929. ◼

LAN expert system a boon for insurers

Network-based software can reduce staffing needs, provide equable underwriting assessment.

By Tom Smith
New Products Editor

Customers of Co-Gen-Sys Corp.'s local-area network-based expert system for automating insurance underwriting say the system reduces staffing needs and provides uniformity in risk evaluation.

Alexander Hamilton Life Insurance Co. of America has used the Personal Insurance Underwriting System (PIUS) for more than two years, and Franklin Life Insurance Co. plans to implement the system this summer.

Users say PIUS can reduce personnel costs by underwriting policies without human intervention and that it can provide uniformity by judging policies against a single judgment base. Human underwriters can come to different conclusions.

PIUS, which is application software that runs on LAN-based personal computers, is compatible with a variety of network operating systems, including Novell, Inc.'s NetWare and Banyan Systems, Inc.'s VINES.

Michael Wilson, vice-president of technical development for Alexander Hamilton Life, said his company was the first to implement an expert system for life insurance underwriting, which is the process of approving or denying an insurance applicant based on risk.

"This is a real hot item now in the insurance industry," Wilson said. "We've got a couple-year jump on the industry, so we think we've seized a real competitive advantage."

Although PIUS can be used to assist professional underwriters in evaluating risks, Wilson said his firm has achieved greater productivity gains by using the system to underwrite insurance policies that do not require medical information such as blood tests.

An underwriter at Alexander Hamilton Life used the expert system's judgment processor to record situations that would be encountered and responses that

(continued on page 23)

Altos steps into LAN mart with first series of servers

By Walter Sweet
West Coast Correspondent

SAN JOSE, Calif. — Altos Computer Systems, a vendor of Unix-based multiuser microcomputers, recently made its first foray into the local-area network server market with the announcement of a high-performance file server.

The Ethernet-compatible 80486-based Altos Power Server/5000 (APS/5000) supports a version of Novell, Inc.'s Portable NetWare running on top of Unix and lets DOS-based personal computers and Unix workstations coexist on the same LAN and share files and applications.

According to Altos, the APS/5000 is the first in a family of servers the company plans to introduce. Previously, Altos supplied only multiuser computer systems and application software based on Unix.

"We're trying to expand our market to provide connectivity and compatibility with a fairly large networking market — the Novell installations in particular," said Roland Icard, product marketing manager for Altos.

As released, the server supports Transmission Control Protocol/Internet Protocol; Novell's Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX); Microsoft Corp.'s Server Message Block protocols; Sun Microsystems, Inc.'s Network File System; and AT&T's Remote File Sharing distributed file systems.

The APS/5000 can also support up to 200 users on a LAN running the same application that supported only 80 users on the company's previous multiuser systems. The server is targeted at users in the accounting, medical, dental and distribution fields.

The 80486-based server provides 15 million instructions per second worth of horsepower and includes 16M bytes of memory that can be expanded to 64M bytes, two 440M-byte hard disks expandable to 29G bytes, eight Extended Industry Standard Architecture (EISA) slots, a Small Computer System Interface

(continued on page 23)

One of the Only Communications Systems Western Union Can't Hook Up With Your Network.

Even though your private network is already using electronic mail and your different office systems are already connected, you'll never be able to extend your communications reach to the rest of the world without a universal messaging network.

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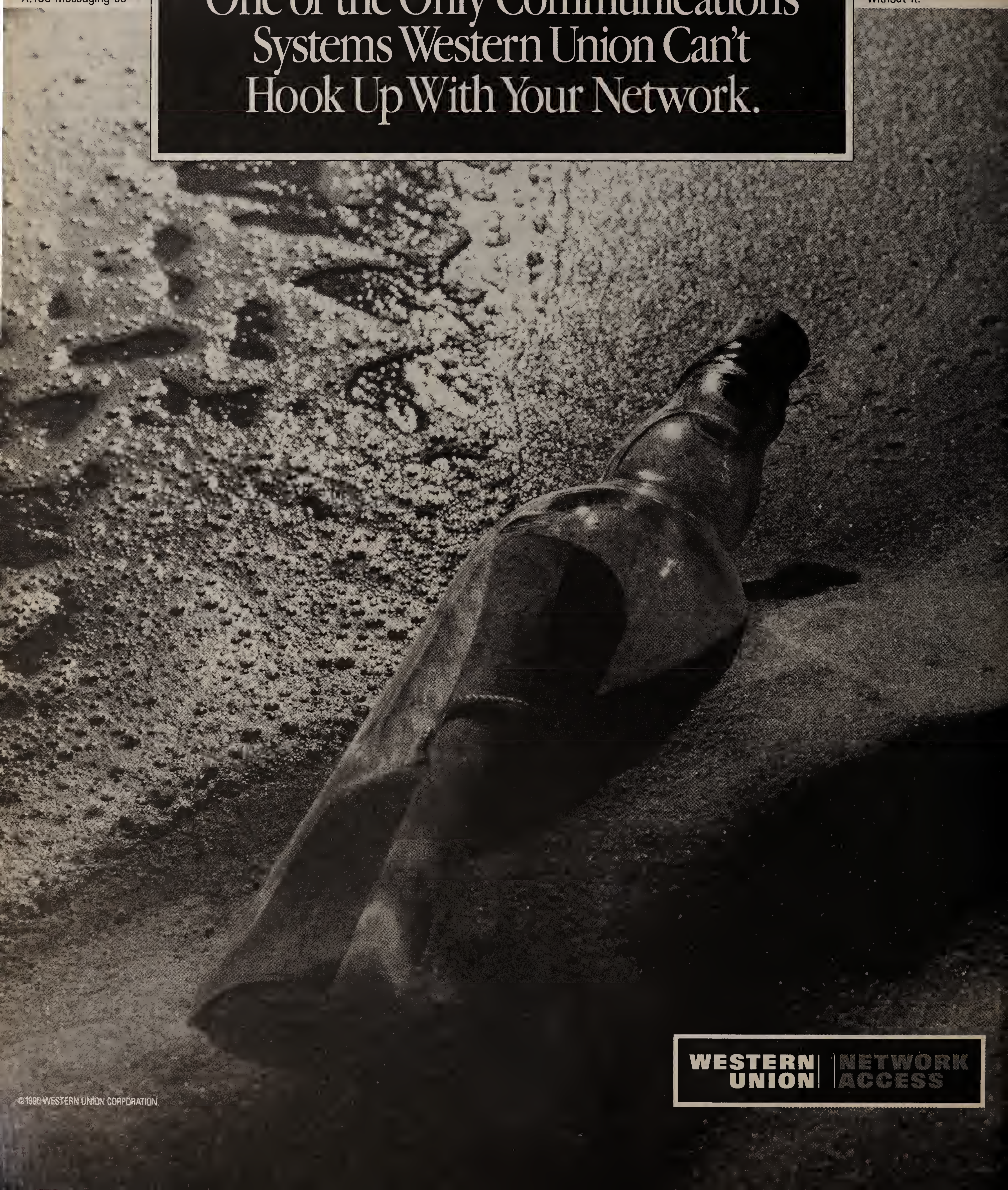
Imagine if someone could make it possible for your end-users to send a fax, EasyLink® e-mail, telegram, telex, cablegram, or Mailgram® message to anyone in the world right from their desktop terminal. Whether it be a simple text message, document, spreadsheet, binary file or EDI format.

With Western Union you don't have to imagine. Because we are that someone. And our NetworkAccess℠ service can give you all these things without having to retrain your staff or disrupt your present network. In short, we're the link that literally puts the world at your desktop.

For more information on Western Union's NetworkAccess, call **1-800-779-1111** Dept. 930. Once you see how much more efficient it can make your business it'll be hard to imagine how you ever managed without it.



WESTERN UNION | **NETWORK ACCESS**

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LAN expert system a boon for insurers

continued from page 21

should be given. The system draws on its judgment base to approve or decline applications. It can also choose to refer more complex cases to a human underwriter.

An application manager component of PIUS controls the flow of information from the product's data entry component to the judgment processor, said Don Solie, division vice-president for insurance industry sales at San Diego-based Co-Gen-Sys.

Clerical staff in Alexander Hamilton's Farmington Hills, Mich., office enter life insurance application data from their Ethernet-attached personal computers using a PIUS data entry component.

Users can hot-key from PIUS into 3270 terminal-emulation mode for communications with a mainframe that stores data about insurance premiums.

Between 40% and 50% of all the company's underwritten business is being approved by the system without the intervention of the company's underwriters, Wilson said.

The system, which handles policies worth up to $500,000, has enabled Alexander Hamilton to cope with a 15% growth in sales over the last two years without adding underwriters, Wilson said.

When the system encounters a situation it has not experienced in the past, it will make a decision, but its decision must be validated by an underwriter.

"To my knowledge, we haven't found any instances where it's made a bad evaluation in those types of cases," Wilson said. In other cases, such as when additional medical tests are involved or more information must be obtained from the applicant, the system refers the application to an underwriter.

Franklin Life plans to implement PIUS in much the same way as Alexander Hamilton, with one exception: Data entry will take place on a mainframe system, which will communicate with the token-ring network-based expert system through LU 6.2 program-to-program sessions.

Franklin Life plans to use the system to review applications that do not require medical exams or more information than is contained in the application.

The company expects that up to 30% of its applications will be handled by the system, according to John Perks, assistant vice-president of administrative systems at the Springfield, Ill.-based insurer. The PIUS system will also be used to determine which applications require review by an underwriter.

> The company expects that up to 30% of its applications will be handled by the system, according to John Perks.
>
> ▲▲▲

PIUS assures greater consistency in approving or denying potential customers because it draws on one judgment base, whereas multiple underwriters will be using their own different judgment bases. "If those 30% approved by PIUS had been handled by 10 or 15 underwriters," Perks said, "there's a greater likelihood there may be a difference in the decisions made by those people." ◘

Altos steps into LAN mart with first server

continued from page 21

(SCSI) controller card and an Ethernet controller card.

The heart of the new file server is the high-performance file processor card, which gives the server twice the disk I/O performance of a Pyramid Technology Corp. MIS12/1 superminicomputer, according to Altos.

The server also has disk striping and disk mirroring to improve performance and reliability. Disk striping allows files to be spread across mulitiple disk drives or SCSI channels to improve performance. Disk mirroring maintains a set of updated files and switches to the second disk in the event of a failure on the primary disk.

The APS/5000 is available now and costs $40,000. ◘

Netnotes

continued from page 21

phone wire. Apple Computer, Inc. LocalTalk networks currently do not support unshielded twisted pair.

The NetPack 12 TurboNet and TurboNet ST can be used to build an AppleTalk network spanning up to 5,000 feet in daisy chain, trunk or star topologies.

TurboNet is a standard AppleTalk connector, while TurboNet ST has a noise reduction component that helps minimize error rates. TurboNet ST also has LEDs that notify a user if data is being transmitted.

The NetPack 12 is available now and sells for $395 for the TurboNet version and $495 for the TurboNet ST version.

Nuvotech can be reached at 2015 Bridgeway, Suite 204, Sausalito, Calif. 94965, or call (415) 331-7815. ◘

SIX QUESTIONS ABOUT BRIDGES AND ROUTERS NO ONE ELSE HAS THE GUTS TO ANSWER.

A lot of companies offer you bridging and routing. But they can't answer the kinds of questions Wellfleet can answer. Why?

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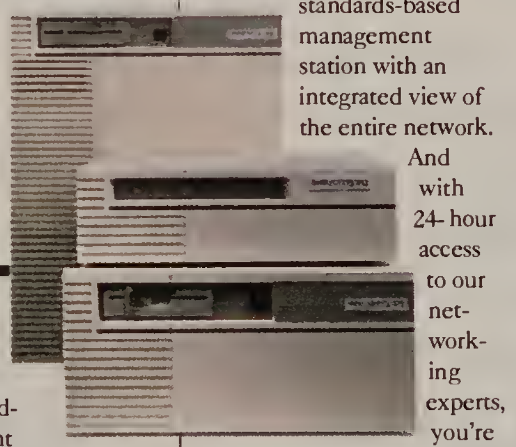
Before you buy another bridge or router product, ask these six questions. Then see if anyone besides Wellfleet can give you the answers.



1 Can you support multiple network standards... all at the same time? You need a solution for *all* your users. So Wellfleet handles all the important networking standards, offering both bridging *and* multiprotocol routing in an advanced, symmetric multiprocessor platform. With the industry's highest performance for all your network applications.

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6 Are you ready to start today? Call 617-275-2400. Wellfleet is ready when you are. Our advanced internetworking platform is already proven with hundreds of units installed worldwide. Just call us or send the coupon below. Wellfleet is the one company that won't just sell you routing and bridging. We'll offer you the *complete* answer.

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☐ Please send me complete information on the Wellfleet internetworking platform.

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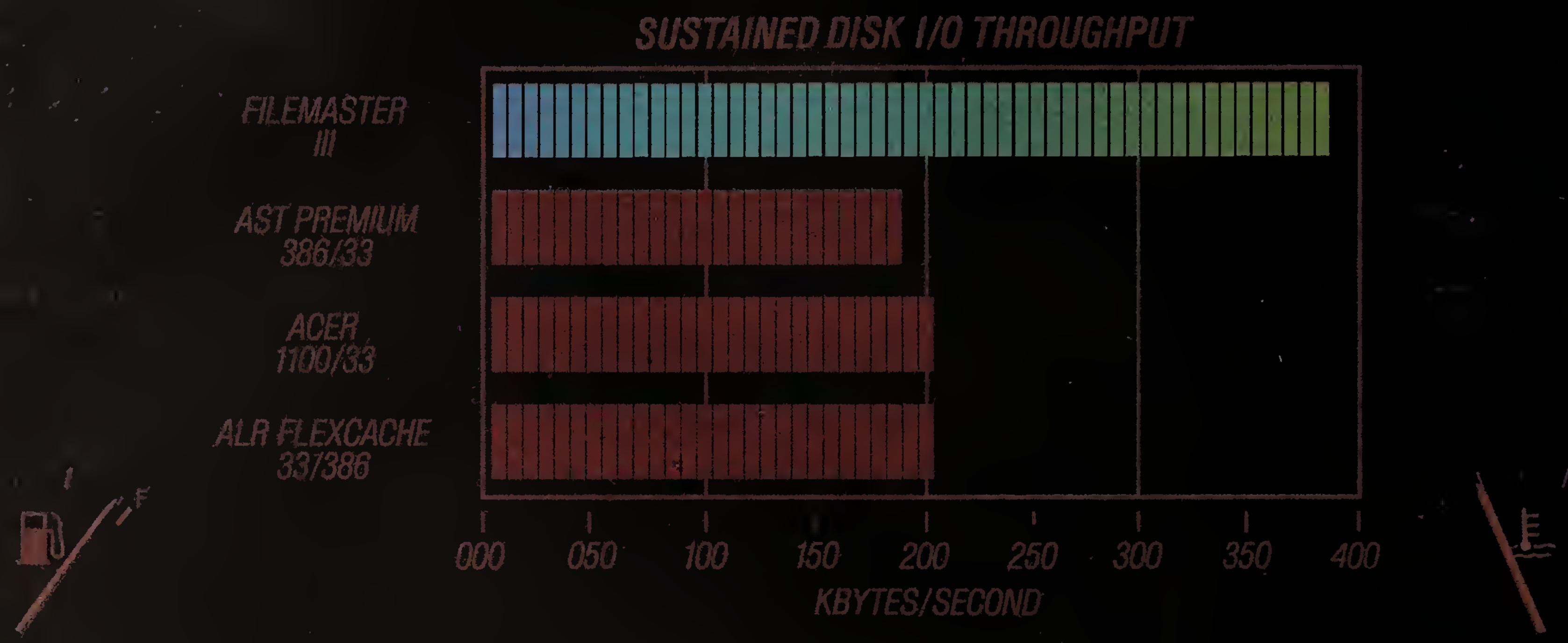
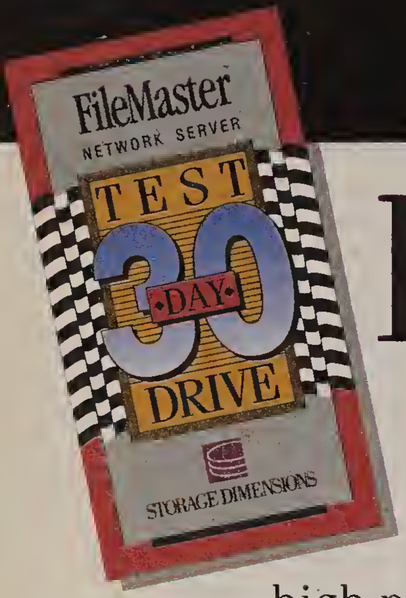
WELLFLEET communications

ENTERPRISE INTERNETWORKING

See the FAXNeT Form on Page #61

FileMaster™ Sets New LAN Speed Record.





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NW-FM2

See the FAXNeT Form on Page #61

MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USERS GROUPS AND ASSOCIATIONS

Dialogue

Are companies implementing adequate information security measures?

“No. People are basically ignoring it, hoping the problem will correct itself. There are an amazing number of people who think just because they are sending something over a regulated common carrier, they are somehow secure.

“They also think security adds overhead and is somehow superfluous. People who are busy keeping these nets running are looking at it as an additional burden and saying, ‘You want me to secure this thing too?’ ”

Beldun Menkus
Executive editor
Association for Systems Management Journal
Hillsboro, Tenn.

“Probably not. They're probably doing pretty well with access control to their mainframe computer systems and not so well with their personal computer networks.

“That's because there really weren't that many options available until recently. Also, people who got used to the free-and-easy access [to local-area networks] are resisting the change to tighter systems.

Hal Tipton
Manager of information systems security
Rockwell International Corp.
Los Angeles, Calif.

“It depends. For mainframes, I think security is very good. But I think you've got much bigger security problems when you get to the personal computer networks because the technology is newer. I think that will get taken care of as more people work with the technology.”

Guy Coniglio
Director of computer services
Bausch & Lomb, Inc.
Rochester, N.Y.

“No. It's going to get worse as more companies install a greater number of network interconnections than they are able to put their arms around. Budgets are tight and [information services] execs are more likely to spend their resources on applications than security.”

Harry De Maio
National Senior Manager
Information Protection Services
Deloitte Touche, Inc.
New York

IS faces growing threat from outsourcing vendors

Departments must beef up marketing to survive.

By Joe Panepinto
Staff Writer

NEW YORK — Network managers are facing a growing threat from outsourcing companies and will have to become better at marketing their services to in-house customers if they are to survive in the 1990s.

Speakers at the recent 1990 Information Management Conference here said information systems (IS) departments have to build corporate support and end-user loyalty to compete successfully against outsourcing firms. The conference was sponsored by The Conference Board, Inc. based in New York.

“IS managers don't own the internal market anymore,” said Don Arnoudse, vice-president of the Index Group, Inc., a consultancy based in Cambridge, Mass. “Outsourcing is a reality. Inhouse IS departments that don't market their services run the risk of becoming less relevant to their businesses, encouraging corporations to turn elsewhere.”

According to Arnoudse, network managers need to listen better to users in order to provide applications that meet the needs of diverse units, maintain a high level of service and support, and above all, let the company know the value of their services.

In short, IS executives have to treat in-house users the same way vendors treat their customers.

“I'm not saying in-house IS departments are dinosaurs and companies should get rid of us,” said Richard Koeller, vice-president of information technology at Whirlpool Corp. in Benton Harbor, Mich. “But there are things we can do to market the services we offer [that would] enhance our reputation, and we should do them.”

According to Koeller, the most important thing an IS department can do to polish up its reputation is to act more like a vendor. Koeller said net managers, like vendors, must help users by being patient and persistent in implementing new technologies and by accepting the notion that users should be allowed to dictate what applications they need.

In-house marketing can also improve the quality of business applications the IS department develops, Koeller said.

According to Koeller, the marketing process begins with an analysis of the business goals of the corporation. Network managers then have to develop an IS strategy to meet those goals, and they must communicate their IS strategy to the rest of the organization. That will improve the visibility of IS within the corporation, he said.

Departmental visibility is ben-

(continued on page 28)

EXECUTIVE BRIEFS

BY WAYNE ECKERSON

Searching for the value of information. All companies recognize the need to protect data, but few know the value of their information or how much money they should spend to protect it.

Fortunately, a committee of the Information Systems Security Association, an international association of information security professionals, is working to develop a set of guidelines that will help companies put a dollar value on their data and justify expenditures on information security systems and programs.

According to Will Ozier, chairman of the Information Valuation Committee, a set of draft guidelines will be released early this summer for public comment. After reviewing comments, the committee will publish a final version later in the year, Ozier said.

The guidelines will help companies identify their information security concerns using a decision matrix that weighs issues such as confidentiality, integrity and availability. The guidelines will also help companies select a method for determining the value of their information from a variety of alternatives, including questionnaires and interviews, statistical analyses and accounting procedures.

For more information, contact Ozier at (415) 989-9092.

Xerox's quality improvement model

As part of Xerox's Leadership Through Quality program, every Xerox employee is taught and expected to apply the following model to improve work processes and to achieve the company's goal of enhancing customer satisfaction.

Planning
- ☐ Identify the desired results of the service or manufacturing process.
- ☐ Identify all potential customers, both internal and external.
- ☐ Define customer requirements through face-to-face discussions and negotiation.
- ☐ Translate customer requirements into in-house specifications.

Organizing
- ☐ Identify all steps needed in the work process to achieve customer requirements.
- ☐ Determine whether the process will produce the desired output.
- ☐ Select measurement tools for evaluating the effectiveness of the process.

Monitoring
- ☐ Evaluate the output of the process.
- ☐ If the process fails to produce the desired output, repeat the above steps.

GRAPHIC BY SUSAN J. CHAMPENY — SOURCE: XEROX CORP., STAMFORD, CONN.

Total quality mgmt. paying off for users

‘Living’ the philosophy helps net departments cut costs and improve level of service to customers.

By Wayne Eckerson
Senior Writer

An emphasis on total quality management is paying big dividends for network departments at many major corporations.

These departments have cut communications costs, improved customer service and boosted departmental morale by using total quality management principles to improve the effectiveness of internal work processes.

While total quality management involves a variety of techniques and tools — such as process improvement methodologies (see graphic, this page), quality circles and cross-functional work groups — it essentially refers to building a commitment among workers and managers to improve the quality of products and services.

“You don't implement total quality management, you live it,” said Lionel Gillerman, manager of network technology at McDonnell-Douglas Aerospace Information Services Co. in Cypress, Calif. “It's a philosophy, a way of approaching work, that is an integral part of the corporate culture.

“Total quality management means you build quality into a product or service up front, instead of employing a quality inspector to catch errors or defects at the back end,” he added.

Xerox quality

Since applying total quality management principles four years ago, Xerox Corp.'s corporate telecommunications department has cut an average of $8.5 million annually from its budget, which now stands at $90 million. At the same time, it has improved the quality of service it provides to more than 100 Xerox field offices around the nation, according to Fred Bolton, manager of telecommunications at Xerox in Rochester, N.Y.

These cost savings are the result of efforts made by more than 30 cross-functional quality teams to address specific problems, improve work processes or manage major projects, such as Tariff 12 negotiations.

Bolton said the work groups are effective because they draw on the expertise of individuals from many different functional areas within telecommunications or the company.

Why market IS internally?

- To prevent the outsourcing of in-house IS functions
- To ensure that technological innovations match business goals
- To foster internal support for new projects
- To enhance appreciation for IS functions
- To serve more sophisticated, demanding, fickle users

GRAPHIC BY SUSAN J. CHAMPENY

For example, one work group, referred to as the quality telecommunications support group, was formed in 1987 to improve the process of providing communications support to the company's district offices. It consists of telecommunications analysts, financial representatives, systems analysts, carrier representatives and programmers. The group de-

(continued on page 28)

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Real-World ISDN.

As an idea, ISDN technology ranks right up there with sliced bread. But what can it do for you in the real world? The U.S. Army's strategic research and development facility at Redstone Arsenal found the answer at their local phone company. South Central Bell showed them how to enlist ISDN technology to help them perform their crucial communications tasks. Faster. More efficiently. Using the AT&T Network Systems 5ESS® Switch. Now, guided by ISDN technology, Army researchers and engineers can use a single telephone line to deploy simultaneous voice and data transactions. At speeds up to 64Kbs. A mission that used to require special conditioned private lines can now be accomplished on ordinary telephone lines over the public switched network. Call your local telephone company marketing representative to find out how ISDN technology can help you win in the real world or call 1 800 638-7978, ext. 3010.

South Central Bell and the U.S. Army

AT&T
Network Systems

IS faces growing threat

continued from page 25

eficial at budget time, when managers who run high-profile departments critical to achieving business goals receive more consideration than others who are less visible.

Koeller and Arnoudse agreed that good marketing will not make up for poor service but that marketing will play an increasingly important support role in the coming decade.

Arnoudse said that by monitoring the internal market for IS, network managers can identify opportunities to take the lead in reengineering business practices. What may look like disruptions to business on the surface — such as mergers, acquisitions or reorganizations — may in fact be outstanding opportunities for the IS department to step out in front by offering business advantages through technology.

But an IS manager can only do that if his department has surveyed the internal market and kept tabs on changes. Only then can an IS manager lay out a distinct marketing strategy and start selling. ◼

Total quality mgmt. pays off

continued from page 25

veloped a system for reviewing all carrier invoices to the district offices, preventing overcharges and redundant billing.

The support group alone has produced cost savings of between $1 million and $2 million annually since it was formed and has significantly improved the quality of service to district offices, Bolton said.

The key to making quality teams work, according to Gillerman, is to have managers who are willing to relinquish ownership of a problem or project to a work group.

"My job is to coordinate the activities of quality teams and help them any way I can, rather than do the work for them," Gillerman said. "Managers of quality teams must be leaders and facilitators rather than dictators."

Quality management empowers work groups to make decisions on their own with limited supervision. This enhances worker participation and morale, and tends to flatten management hierarchies.

Besides hands-off managers, education plays a critical role in the success of quality management initiatives, Gillerman said.

Like Xerox, McDonnell-Douglas puts all its employees through classes that explain the importance of a commitment to quality and teach cooperation and teamwork. This training is essential for making quality an integral part of a corporate culture, he said.

Gillerman said McDonnell-Douglas plans to build on this initial training by teaching key employees to use statistical measures to control the level of quality in products and services.

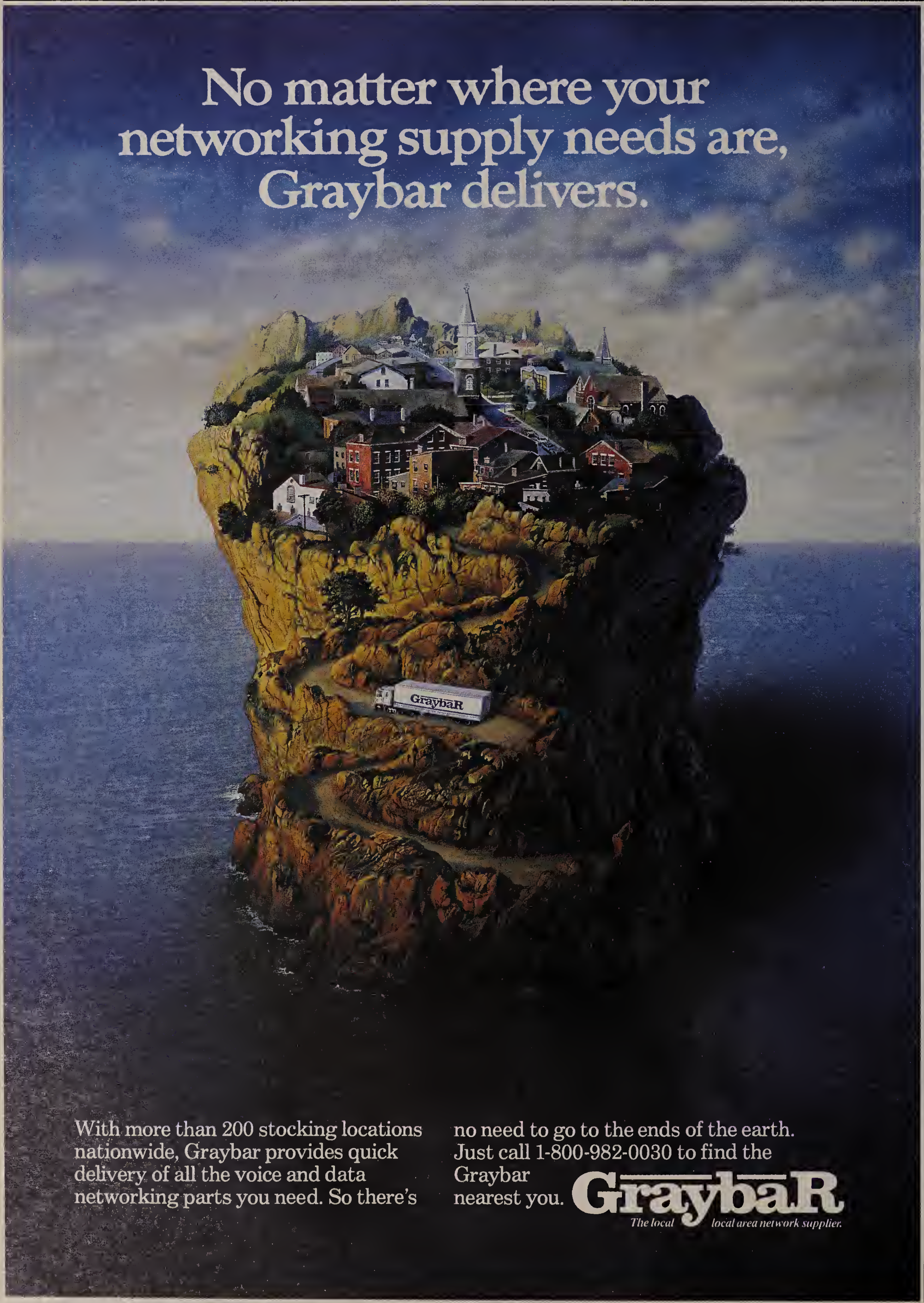
The use of statistics will help work groups determine the appropriate degree of quality to build into a product or service in relation to customer expectations and costs. Too much or too little quality can be detrimental to the company's and customers' interests, Gillerman said. Overzealous work groups, for example, may give customers a higher quality product than they really need or are willing to pay for, he said.

Gillerman said he recognizes that education may not be enough to persuade skeptical or cynical employees to embrace total quality management.

"The challenge of total quality management is eradicating history," Gillerman said. "People remember other management techniques — such as quality circles and zero defects — that never really succeeded because they were carried out in a vacuum, and they treat total quality management as just another management buzzword."

But Gillerman said he believes that the skeptics and cynics at McDonnell-Douglas will come on board once the quality management concept begins to yield some tangible benefits. After one year, quality management has already boosted teamwork and camaraderie in the company's telecommunications department.

"Quality management is the way to go," Gillerman said. "It's the best way to satisfy customers and lower costs." ◼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"We believe it's much better to use satellite communications for peaceful purposes than for Star Wars."

Igor Yershov
Deputy director for administration, telecommunications and finance
Telegraph Agency of the Soviet Union
Moscow
Speaking about the recent Tass purchase of very small aperture terminal satellite equipment from Rockville, Md.-based Contel ASC

World News

MCI International, Inc. last week announced the signing of a letter of intent to interconnect its Vnet virtual network service with planned virtual networking services from the Belgian carrier **Regie des Telegraphes et des Telephones (RTT).**

An MCI spokesman said RTT has not yet detailed when its domestic virtual network service will debut, nor when the interconnection with Vnet will occur.

Also, details about pricing and service features are not available yet; however, the spokesman said those details are expected to be released within a few months.

The only other foreign carrier with which MCI said it plans to interconnect its Vnet service is British Telecommunications PLC.

That interconnection is scheduled for the fourth quarter of this year.

MCI also signed an agreement calling for the interconnection of MCI Mail with RTT's DCS Mail service via X.400.

That interconnection will occur on a trial basis beginning in the second quarter, with commercial service becoming available later.

The agreement will allow DCS Mail customers to have electronic mail messages sent to MCI Mail, printed out by MCI printers in the U.S. and mailed to a final destination in the U.S. ☒

Network changes south of the border

Recent regulatory and administrative initiatives by the Mexican government.

Date	Change
Early 1989	The government moves to lessen the power of the Telecommunications Workers Union over TelMex.
Late 1989	Mexico's regulatory authority spins off its microwave and satellite operations into a separate unit, dubbed Telecomm.
Dec. 1989	The government asks vendors to bid on purchasing a portion of its 51% ownership stake in TelMex.
Jan. 1990	Switched service rates are adjusted to better reflect costs. International rates are reduced an average of 40%, local calling rates are increased an average of 5%, and daytime long-distance rates are increased an average of 36%.

Infrastructure investments planned

From 1990 to 1994, $10 billion will be allotted for digital switching systems, digital microwave systems, fiber-optic trunks, upgraded satellite facilities, ISDN, digital access and cross-connect systems.

GRAPHIC BY SUSAN SLATER

SOURCE: PYRAMID RESEARCH, INC., CAMBRIDGE, MASS.

Mexico network upgrade to improve quality, cut costs

Public net to get $10b infusion for new facilities.

By Barton Crockett
Senior Editor

CAMBRIDGE, Mass. — The Mexican government in the past year has embarked on a series of initiatives aimed at improving the country's public net services.

These initiatives include planned investment of $10 billion in public network facilities, reductions averaging 40% in international calling rates and a loosening of the union stranglehold over operations of the dominant domestic carrier, Telefonos de Mexico S.A. (TelMex).

These changes should help U.S. businesses trying to support operations in the country by improving the quality of public network services and reducing costs, according to Maria Monnes, an associate with Pyramid Research, Inc., a consultancy based here.

"The Mexican government has realized that telecommunications can be a tremendous source of revenue, and they're moving to capitalize on that," she said.

Monnes recently completed a report titled "Mexico's Telecom Strategy," which is based on 18 months of interviews with officials and vendors in Mexico.

Investment of $10 billion

According to Monnes, among the most ambitious of the efforts to improve Mexico's public network is the $10 billion to be invested in new facilities between now and 1994. Monnes said TelMex officials plan to use the money to add five million digital and 500,000 analog local access lines to the public network. The network currently has a total of 1.1 million digital and 4.4 million analog access lines.

TelMex also plans to greatly expand its Overlay Network, which currently consists of broadband digital microwave facilities in and around Mexico City used to provide private-line services to business users. Monnes said TelMex will expand the Overlay Network to 23 cities by 1993 using 140M bit/sec digital microwave facilities.

Monnes said TelMex plans to use the Overlay Network to provide nationwide Integrated Services Digital Network services. TelMex began experimenting with ISDN in 1988 in Mexico City during a series of pilot tests with Digital Equipment Corp., GTE Corp., IBM, Ing. C. Olivetti & Co., S.p.A. and Siemens AG.

Monnes said TelMex plans to have a total of 1,500 Basic Rate Interface access lines supported by the Overlay Network and via local exchanges in Mexico City and in the Mexican cities of Monterrey and Guadalajara by the end of next year. Commercial service is scheduled to begin on a trial basis in 1992 or 1993.

But funding for these projects may be a problem. Even though the carrier is healthy, earning profits of $633 million on revenue of $1.51 billion in 1988, Monnes said it may have difficulties raising the money. TelMex says it plans to fund 70% of the network investments itself.

Other efforts are also reshaping Mexico's public network. Early this year, TelMex moved to readjust switched service prices to reflect costs better. In the past, Monnes said, TelMex charged among the world's highest rates for international calling services, in part to subsidize local service.

At the beginning of this year,

(continued on page 30)

Customs seeks new laws governing EDI

Asks Congress to rule on validity of electronic filings and go-ahead for signature replacement.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The U.S. Customs Service is going to Capitol Hill this spring to ask Congress to change the laws governing the use of electronic data interchange in import declarations and record keeping.

Customs officials say the recommendations in the Customs Modernization Act of 1990 would wipe out archaic laws that are not applicable to EDI and that leave users in legal limbo.

The 60-year-old Tariff Act demands that importers sign customs declarations. In addition, The Statute of Frauds stipulates that a written signature is necessary to enforce a contract in court for the purchase of goods worth more than $500, legal experts explained. EDI poses particular legal problems for importers, brokers and the Customs Service because, as a paperless transmission medium, it does not bear a written signature.

The Customs Service said it wants Congress to affirm the validity of electronic filings in general and allow the Secretary of the Treasury to establish a substitute for the written signature. In lieu of signatures, Customs is suggesting that it establish a certification program in which importers and brokers would be registered.

Clearing up the legal haze of contradictions is important to Customs because it plans to bring on-line an EDI for Administration, Commerce and Transport (EDIFACT) network in the fall to supplement the Automated Broker Interface (ABI) system, which has been in place since 1984.

ABI, based on Customs' proprietary standard for EDI, is used by brokers and importers to electronically file documents in order to expedite Customs' release of goods. Use of ABI is widespread; in 1988 alone, Customs cleared more than 8.4 million electronic entries through ABI.

Fueling the EDI fire

The availability of EDIFACT is expected to further accelerate the use of electronic filing of trade documents, in part because Customs is encouraging traders to use a new message set called Customs Declaration. The message set, designed in cooperation with trade and standards organizations, will simplify trade by eliminating the need for many of the different documents currently used in customs declarations.

Benjamin Wright, a Dallas-

(continued on page 30)

Firm revamps global net using fiber, satellite links

By Paul Desmond
Senior Writer

NEW YORK — Bear, Stearns & Co., Inc. recently installed a package of international, high-speed fiber-optic and satellite links to improve communications with its operations in Europe and the Far East.

The international investment firm, based here, said the 192K and 128K bit/sec links will replace two existing 64K bit/sec links to Asia and supplement an existing T-1 link to London.

The facilities — provided by Overseas Telecommunications, Inc. (OTI), MCI Communications Corp. and Cable and Wireless PLC — will also improve network management capabilities and offer enough capacity to support growing demand for international voice and data services, according to Ken Starkey, associate director of communications for Bear, Stearns.

The facilities to Europe include two OTI 192K bit/sec links, one of which runs to Paris over the Trans-Atlantic Telecommunications-8 transatlantic fiber cable. The other is a satellite link to London that supports 64K bit/sec traffic to Amsterdam and Geneva.

The Asian links include an OTI 128K bit/sec satellite link from Bear, Stearns' Los Angeles office to Tokyo, and a second link from MCI and Cable and Wireless to Hong Kong, both of which replace 64K bit/sec lines.

As part of the package deal with OTI, the investment firm also gave the carrier its T-1 circuit business between New York and London. OTI will support

(continued on page 30)

Customs seeks new laws governing EDI

continued from page 29

based attorney who has written a book on the legality of EDI, says the proposed changes, if approved by Congress, would only apply to the use of EDI in Customs applications, not to EDI applications in general. "It won't be a precedent," Wright said. "But it does help set the tone and direction of the law."

Vicki Hodziewich, director of the Office of Trade Initiatives, said the agency's lawyers are working on the final wording of the Customs Modernization Act.

The Secretary of the Treasury and the Office of Management and Budget still have to approve the initiative before it's presented to Congress.

At this point, Customs said it is not comfortable discussing the legal vulnerabilities raised in its request for change. But Hodziewich emphasized that the change is needed to support present and future operations.

Waiting for a blessing

Wright hailed the initiative from Customs, saying the service is trying to address the fundamental EDI question of what replaces the signature on paper.

"They want some kind of blessing from Congress to allow electronic filing," he said. "The wording of the law as it stands now raises some question whether Congress actually intended to permit electronic filings." He observed that the confusion goes back to the overall gray area in the law regarding EDI.

Wright said another U.S. agency, the Internal Revenue Service, uses EDI to interact with the public and takes the signature into account through measures of its own.

When a taxpayer goes to a third party qualified to file tax forms electronically, the third party has the taxpayer sign a release stating responsibility for that tax filing.

But Wright speculated that if Congress legislates the changes that Customs wants, a different system of controls will emerge. Some 250 million taxpayers present different legal risks than the smaller number of well-organized businesses, mainly importers, that use Customs EDI services, he said. ◪

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Firm revamps net using fiber, satellite

continued from page 29

that link in conjunction with British Telecommunications PLC.

With the new international circuits, Bear, Stearns has extended to its overseas locations the features offered on its 10,000-line New York Telephone Co. Centrex service, he said. The network, for example, now supports an international five-digit dialing plan.

The foreign sites are configured as off-premises extensions and get a dial tone generated from New York, which means they use the same dialing schemes and get the same line quality as they would if they were located in this country, Starkey said.

Bear, Stearns previously had accessed international circuits through MCI's Vnet.

Network management for data circuits has also been improved with the new high-speed links because Bear, Stearns has installed its own Newbridge Networks Corp. 3600 MainStreet multiplexers at sites in Amsterdam, Geneva, Hong Kong, Paris and Tokyo. Besides data channels, those devices support 8K and 16K bit/sec voice circuits, Starkey said.

Previously, Bear, Stearns supported data communications to those sites via a 4.8K bit/sec analog multidrop circuit. The modems used did not support net management capabilities.

By contrast, the Newbridge 3600s are supported by the 4602 MainStreet network management system, which Starkey said gives network managers here a complete view of the remote multiplexers, including information concerning individual interface cards in the remote multiplexers. ◪

Mexico net upgrade to improve quality

continued from page 29

TelMex cut standard international calling prices an average of 40% while raising standard daytime, domestic long-distance charges an average of 36% and increasing local calling charges an average of 5%.

Early last year, Mexico President Carlos Salinas de Gortari initiated a series of reforms aimed at reducing the control of the Telecommunications Workers Union over public network projects.

Monnes said union workers, who constitute 90% of TelMex's work force, are thought to have slowed network projects by exercising veto power over implementation plans and frequently taking bribes. She said Salinas de Gortari successfully moved to lessen union control over projects, which should enable TelMex to respond to service requests more rapidly.

The Mexican government also revamped its regulatory regime late last year by spinning off satellite and some microwave operations from the national regulatory agency, the Secretaria de Communicaciones y Transportes, into a separate carrier organization. Monnes said conflicts of interest that arose by having regulators and operators working in the same organization should be reduced now.

Finally, Monnes said that last December, the Mexican government invited investors to purchase a portion of its 51% controlling stake in TelMex. Such foreign investment could help TelMex upgrade facilities by providing much needed capital. Monnes added that delays in the bidding process have made investors skeptical about whether the sale will go through. ◪

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Modem lets cellular phones communicate

ZeBryk Engineering Corp. recently introduced a full-duplex asynchronous modem that enables mobile cellular telephones to communicate at speeds up to 12K bit/sec.

The modem, the **VCM-12000,** supports Microcom, Inc.'s Microcom Network Protocol (MNP) Class 10 for data transmission over low-quality connections ("Microcom introduces first modem to support MNP 10," *NW,* Nov. 13, 1989). The VCM-12000 also supports Bell 103 and 212A standards for communications at 300 and 1,200 bit/sec, as well as CCITT V.22 and V.22bis for operation at 1,200 and 2,400 bit/sec.

The modem can connect to cellular telephones from a variety of manufacturers, including AT&T and Fujitsu, Ltd.

VCM-12000 is expected to be available in June 1990 for $1,195.

ZeBryk Engineering Corp., 149 Chapin St., Southbridge, Mass. 01550; (508) 764-3855.

Cisco announces support for IBM source routing

Cisco Systems, Inc. last week announced a software enhancement to its internetworking routers that enables them to support IBM's source routing bridging protocol over a variety of remote links in wide-area networks.

Previously, the routers could act as source routing bridges only across token-ring local-area networks.

According to cisco Systems, the new software gives its routers the capability to bridge remote token-ring networks via a complex WAN rather than just over point-to-point serial lines.

The source routing bridging software operates concurrently with the network protocols the routers already support.

The remote source routing bridging software is available now. Prices range from $925 to $1,800 per router, depending on the size of the unit.

cisco Systems, Inc., 1525 O'Brien Drive, Menlo Park, Calif. 94025; (415) 326-1941.

Ameritech joins integrated net management market

ANM service draws upon three vendors' offerings.

By Tom Smith
New Products Editor

CHICAGO — Ameritech Information Systems (AIS) recently announced plans to offer an integrated network management service by tailoring net control tools from three other vendors to manage users' voice, data and video networks.

The service, called Ameritech Network Management (ANM), enables users to perform real-time event tracking and fault isolation, in addition to handling less critical operations such as resource usage tracking.

The service will be based on an unnamed product from Applied Computing Devices, Inc., as well as TelWatch, Inc.'s NetExec and Westinghouse Communication Software, Inc.'s Communications Management System (CMS) II. AIS is the exclusive distributor of these products in its region and will tailor any combination of the products into a custom network management system.

AIS will analyze a user's network configuration to determine which of the three systems is best suited to that user's network, according to Cheryl Gidley, market analyst for ANM. The vendor will install, configure and customize the net management system by setting alert and alarm priorities, for instance.

NetExec and the Applied Computing Devices system both offer real-time data management with interfaces to a variety of network elements such as private branch exchanges and central office switches. Both of those products also support network management subsystems — called element managers — that monitor and control products such as modems and multiplexers.

This type of functionality would enable ANM service to compete against bigger name enterprisewide management systems, according to John Hess, ANM marketing manager. Such systems include AT&T's Accumaster Integrator and IBM's NetView when it is configured with NetView/PC, which enables the host-based management system to manage third-party element managers and hardware devices.

The Applied Computing Devices system, which runs on a Unix-based mainframe, covers all five levels of Open Systems Interconnection management: ac-

(continued on page 35)

ESCO System's fax board merges, sends documents

By Susan Breidenbach
West Coast Bureau Chief

SAN FRANCISCO — ESCO Systems, Inc. recently unveiled a facsimile board that can merge data from Ashton-Tate Corp.'s dBase files with other documents and transmit them to other faxes.

Demonstrated at DB/Expo '90 here late last month, SkyFax can pull data from dBase files, merge it with memos, quotations, invoices, billing reminders or other customized documents, and broadcast the result to facsimile machines around the world.

SkyFax is a facsimile add-on board that plugs into an industry-standard personal computer and can transmit documents at 9.6K bit/sec to any Group III fax machine. The board also comes with software that lets it access dBase files.

When using SkyFax, users specify which records in a dBase data base are to be extracted for merging and faxing. After the resulting document is broadcast, a marker is attached to the records in the data base that were extracted, thus providing an audit trail.

The product also has a "print-to-fax" feature that lets users take electronic files created in any DOS application and fax them directly, without first printing out a hard copy. The files can be any type: word processing documents, spreadsheets or even graphics files such as computer-aided design drawings.

The board can be programmed to schedule document broadcasts at night when telephone rates are lowest. The product also includes a character font editor and a fax image editor for making changes to the graphical elements of a document.

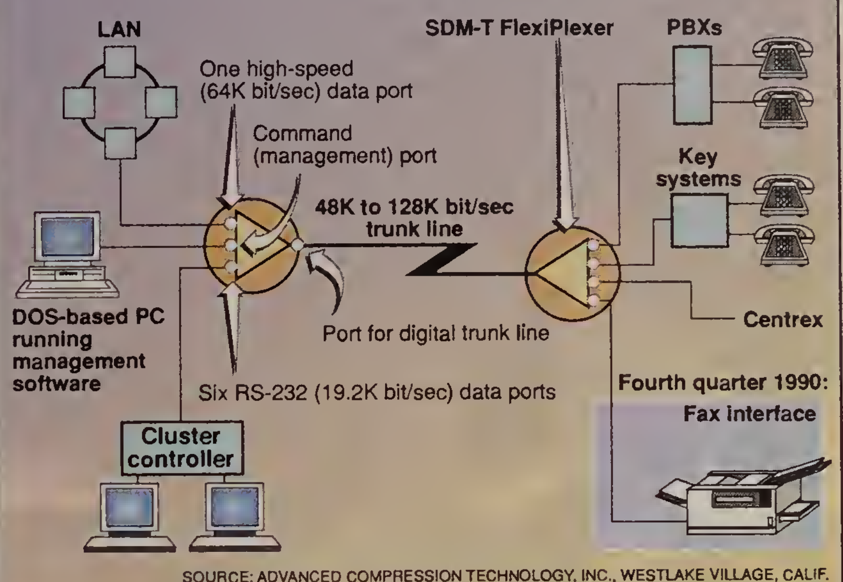
It also supports dynamic insertion of graphical data — such as logos or signatures — into text files.

The complete product, including software, is priced at $399.

ESCO Systems can be reached by writing to 540 Weddell Drive, Suite 2, Sunnyvale, Calif. 94089, or by calling (408) 744-9001.

FlexiPlexer's voice/data support

Advanced Compression Technology's SDM-T FlexiPlexer mux melds voice, data and fax at sub T-1 speeds.


LAN
SDM-T FlexiPlexer
PBXs
One high-speed (64K bit/sec) data port
Command (management) port
Key systems
48K to 128K bit/sec trunk line
DOS-based PC running management software
Port for digital trunk line
Centrex
Six RS-232 (19.2K bit/sec) data ports
Fourth quarter 1990: Fax interface
Cluster controller

SOURCE: ADVANCED COMPRESSION TECHNOLOGY, INC., WESTLAKE VILLAGE, CALIF.
GRAPHIC BY SUSAN J. CHAMPENY

ACT to intro sub T-1 voice/data/fax mux

SDM-T will support data rates up to 64K bit/sec and compress voice signals by as much as 8-to-1.

By Tom Smith
New Products Editor

WESTLAKE VILLAGE, Calif. — Advanced Compression Technology, Inc. (ACT) said it plans to introduce next month a time-division multiplexer that combines voice, data and facsimile traffic over digital lines at speeds up to 128K bit/sec.

The point-to-point multiplexer, called SDM-T FlexiPlexer, supports data rates up to 64K bit/sec and compresses voice signals so they only require between 8K and 16K bit/sec, instead of the traditional 64K bit/sec of bandwidth.

SDM-T FlexiPlexer is primarily targeted at users in small and midsize offices who need to send voice, data and fax traffic to a central office but do not require T-1 bandwidth, according to Martin Shum, president and chief executive officer of ACT.

SDM-T FlexiPlexer is a stand-alone unit with a motherboard that sports six data interfaces and comes with eight add-on slots that accommodate six voice channel interfaces and two facsimile interfaces.

SDM-T FlexiPlexer's motherboard has six RS-232 data ports. One can be converted to a V.11 or a V.35 port for data transmissions up to 64K bit/sec. The other five ports support synchronous or asynchronous data at speeds up to 19.2K bit/sec.

The V.11/V.35 port is primarily intended for local-area network bridging applications, Shum said, while the lower speed ports are better suited for traffic such as IBM Systems Network Architecture, terminal-to-host or minicomputer-to-terminal traffic. ACT's proprietary framing format for encapsulating data makes the SDM-T FlexiPlexer protocol-independent, he said.

The motherboard also provides a V.11 or V.35 port to connect the unit over 56K, 64K bit/sec or fractional T-1 lines to other SDM-T FlexiPlexers. The multiplexer can also transmit data over digital microwave connections and very small aperture terminals.

Users can also insert up to six single-channel voice cards into the SDM-T FlexiPlexer.

▲▲▲

Finally, the motherboard has an asynchronous RS-232 port that connects a DOS-based personal computer running ACT's Personal Computer Network Management System (PCNMS) software. That package enables users to configure the SDM-T FlexiPlexer on a local or remote basis and to allocate time slots within the available bandwidth for voice and data channels.

Users can also insert up to six single-channel voice cards into the SDM-T FlexiPlexer. Those cards offer E&M, two-wire loop-start, and two-wire loop-start or ground-start telephone inter-

(continued on page 35)

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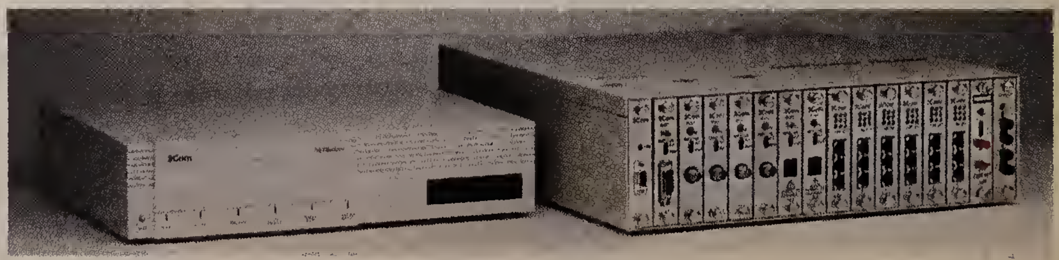

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DSC offers voice processor, call processing software

By Tom Smith
New Products Editor

SANTA BARBARA, Calif. — Digital Sound Corp. (DSC) recently unveiled a low-end voice processing system that supports up to 32 telephone trunk lines, 251 hours of storage and 3,000 voice mailboxes.

DSC also introduced new call processing software that offers significantly improved functionality over its earlier call processing software, as well as a new release of its voice-messaging software.

The new VoiceServer 1110 resides at the low end of the company's second generation of voice processors, which support as many as 192 trunk lines, 900 hours of storage and 6,000 voice mailboxes.

All of DSC's voice processors, which reside between private branch exchanges or central office switches and telephone stations, run the Unix operating system. Unix enables them to support multiple applications, including voice messaging, call processing, interactive voice response and communications with hosts and local-area networks.

The new VoiceServer 1110 is targeted at companies with 200 to 3,000 employees, as well as larger companies investing in their first call processing system, according to Greg Hawkins, director of marketing for DSC.

The company offers its own voice-messaging and call processing software packages, as well as a C programming interface and a scripting language that combine to allow application developers to build interactive voice response applications.

Call processing software allows users to call individuals or departments from their push-button telephone keypad. Interactive voice response allows callers to enter orders from their telephone keypad.

VoiceServer 1110 offers from 380M to 1.5G bytes of disk storage. By compressing stored voice to a 4-to-1 ratio, the 1110 is able to store 251 hours of messages.

The new model is available in configurations supporting either four to 16 analog trunks or up to 32 digital trunks, Hawkins said.

VoiceServer 1110 is expected to be available in June. A configuration supporting eight analog trunks costs $43,500. For 24 digital trunks, the cost is $97,640.

The company also introduced InfoMail 1.1, a new release of its voice-messaging software, which allows up to 72 trunks to be assigned for voice mail on a temporary or permanent basis. The earlier release allowed up to 48 trunks to be used for voice mail.

InfoMail 1.1 also supports any mix of up to five PBXs or central office switches. The previous release supported only three switches of a single type. This support will let telephone companies using the software service a variety of switches without adding hardware.

InfoMail 1.1 runs on the new VoiceServer 1110, as well as the 2110 and 3110 models, which are the other two members of the second-generation product line. InfoMail 1.1 costs $5,600 and is expected to be available in June.

DSC also unveiled new call processing software, dubbed CallController, which runs on the company's VoiceServer 1000 and 2000, in addition to the newer VoiceServer 1110, 2110 and 3110. The new software allows users to provide 30 levels of call administration in voice processing applications. For example, a clothing retailer could designate a number on the caller's keypad for the men's clothing department, another for outerwear, a third for winter outerwear and so on.

The company's earlier call processing software, which CallController will replace, supported only three levels of administration.

CallController is scheduled to be available in June for between $3,000 and $5,600.

DSC can be reached in writing at 2030 Alameda Padre Serra, Santa Barbara, Calif. 93103, or call (805) 569-0700. ◼

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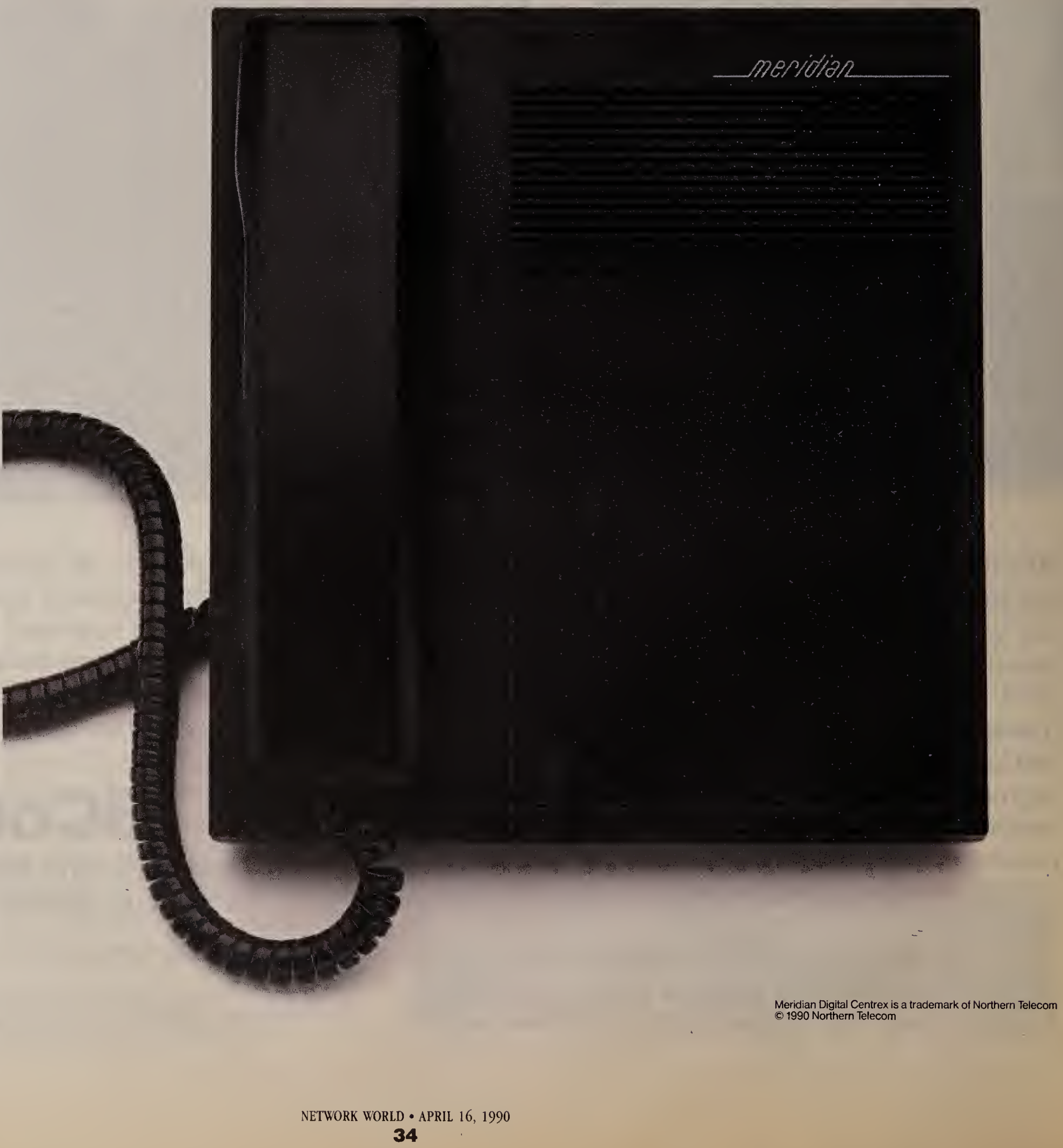

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Ameritech joins integrated mgmt.

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counting, net configuration, fault isolation, performance monitoring and security management. It features 100 interfaces to third-party elements and element management systems, Hess said.

TelWatch's NetExec is a fault management system that runs on a Sun Microsystems, Inc. workstation to monitor network devices and net control subsystems by examining alarms and alerts. However, it lacks sophisticated management features, such as configuration management. NetExec offers a dozen interfaces to third-party elements and element management systems.

Applied Computing Devices' product and NetExec offer a direct link to NetView and support bidirectional control, whereby they can send alert information to NetView and receive commands from it. This means that not only can they bypass NetView/PC, but if NetView is the primary network management tool at a user site, ANM could be positioned as a net control subsystem.

Westinghouse's CMS II provides users with a historical data base used for billing, cable management, inventory, service order and trouble ticket management, but it does not perform real-time performance or configuration monitoring. CMS II runs on an IBM mainframe.

Each of the three systems have their own data bases.

By year end, AIS plans to develop an interface that allows them to exchange data.

ANM is available now. A system based on CMS II ranges in price from $50,000 to $300,000. A setup based on NetExec starts at $50,000, and an Applied Computing Devices system starts at $200,000.

AIS can be reached by writing to 500 W. Madison St., Suite 1600, Chicago, Ill. 60606, or by calling (312) 906-4514.

Some people think the only way to get a made-to-order telephone system is to buy their own.

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Meridian Digital Centrex gives you a powerful portfolio of features and phones. You can mix and match them, add and subtract them. For example:

- Calling Name on a Centrex Display Set, to know who's calling before you answer.
- ISDN, when you want integrated voice and data.
- Meridian ACD, for flexible automatic call distribution.

No other system, no matter how customized, is more flexible than that.

Call your telephone company and say you want to design your own system. Ask for Meridian Digital Centrex from Northern Telecom.

northern telecom

ACT to intro sub T-1 mux

continued from page 31

faces, enabling the multiplexer to support private branch exchanges, key systems and Centrex, respectively.

Each voice interface digitizes and compresses voice calls, and the motherboard frames the voice signal in ACT's proprietary protocol for transmission between ACT multiplexers.

Users can allot between 8K and 16K bit/sec for each voice channel, Shum explained. This contrasts with standard pulse code modulation (PCM) signals, which require 64K bit/sec, or adaptive differential PCM (ADPCM) signals, which require 32K bit/sec. This lets the multiplexer process multiple calls through the available bandwidth.

Depending on the amount of bandwidth that has been assigned to each voice channel, the compression algorithm will assign as many bits as possible to sounds, such as vowels, that need to be more clearly enunciated and a fewer number of bits to less distinctive sounds, such as consonants.

"At 16K, users won't be able to tell the difference between this and ADPCM," Shum said. "At 8K, we have communications-grade quality, but I can't claim toll quality."

By the fourth quarter of this year, the company will introduce a fax interface with a built-in modem. The modem will demodulate an outgoing fax so it can travel over the network to another SDM-T FlexiPlexer in its native 9.6K bit/sec digital form and not take up the 64K bit/sec devoted to a modulated fax signal.

SDM-T FlexiPlexer is expected to be available in May. A basic configuration with no voice interfaces is priced at $2,400. A voice interface that supports a wide variety of phone systems costs $1,700, and a voice interface with only PBX ports costs $1,500. The fax interface is expected to be available in the fourth quarter. Its price has not been determined.

PCNMS software costs $500 and is expected to be available in May. Software that allows the multiplexer to support a digital leased line costs $200.

ACT can be reached by writing to 31368 Via Colinas, Suite 104, Westlake Village, Calif. 91362, or by calling (818) 889-3618.

OPINIONS

NETWORK SECURITY

BY JAMES KOBIELUS

Short-circuiting the high-tech Butterfly Effect

Network security is almost by definition an exercise in frustration. It is measured more by its failures than its successes. Chances are those failures will grow more visible and embarrassing over time: Witness the fabled Robert Morris Internet worm.

It doesn't help when the popular media speak in grave tones about viruses, worms and other electronic beasties. The net effect is to spread fear and apprehension among the uninformed general public, which has long suspected that all this technology business is getting out of hand.

None of this is to imply that network security technologies and procedures are ineffectual. To the contrary, it seems that vendors and users have every security angle covered, from retina scans to encryption schemes of mind-boggling sophistication. Still, it's one thing for the technologies to be available and quite another to make them affordable and ensure that users will apply them correctly.

The big question is, who decides which network security measures are appropriate to a given situation? One's first instinct is to take a laissez-faire approach — that is, let the user decide on the appropriate use of passwords, multilevel data privileges, encryption, removable storage devices, biometrics, antiviral software, fiber-optic cabling and other means of keeping the bad guys out.

> The good, the bad and the ugly have access to a world of on-line resources.
>
> ▲▲▲

However, a laissez-faire network security policy only makes sense where the damage from unauthorized access can be isolated to a particular user, organization, location or subnetwork. For example, I'm only hurting myself if I leave the password to my personal data bases taped to the office wall.

The truly scary thing about networks, however, is that it's getting more difficult to contain the damage from lax security. In this age of distributed computing, users — the good, the bad and the ugly — have fingertip access to a world of on-line resources. A lot of innocent bystanders can fall victim to a sinister hacker or virulent logic bomb.

All that the Robert Morrises of this world need is a fingerhold — a pilfered password, which is a seemingly insignificant vulnerability in a remote host operating system — and they can move mountains. A few thousand lines of renegade code can ricochet far and wide, and bring an entire network crashing down in pieces.

Chaos theorists call this the Butterfly Effect: a small local disturbance that can whip up a catastrophe of global proportions.

In a distributed computing environment, security is a global, not a local, concern. Consequently, network security standards should be established in a top-down fashion. Perhaps the most important services that can be provided from above are periodic security audits and penetration tests spanning the entire network, rather than just keying in on individual computers in isolation. In addition, a high-level network security bureau can function as a detective agency, tracking down the root cause of disturbances.

Still, we must resign ourselves to eventual failure. No one will ever be able to stop the determined hacker from waylaying even the best designed network security scheme. But good security planning should allow us at least to anticipate and fend off the likely angles of attack.

Kobielus, a contributing editor to Network World, *is a consultant based in Alexandria, Va.*

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EDITORIAL

Merging of giants increases network market competition

The recent merger of Lotus Development Corp. and Novell, Inc. is a striking milestone in the continuing evolution of the networking industry. Like the collision of two continental masses, this event may forever change the surrounding landscape.

Although a surprise, the merger was destined by the maturation of the market. For Lotus, the proliferation of local-area networks threatens the demand for stand-alone microcomputer applications. For Novell, it's getting more difficult to sell networks simply on their technical merit. Users want applications, not network operating systems.

Applications designed from the ground up to take advantage of LANs will be as critical to Lotus' long-term success as they will be to Novell's. Among other things, the merger will hasten the development of distributed applications capable of letting network devices share computing tasks.

Although the merger has all the makings of a well-conceived offensive strategy, it's probably more of a defensive move — particularly for Novell — to gird against advances by Microsoft Corp. in conjunction with IBM.

Novell President and Chief Executive Officer Ray Noorda acknowledges that he considers IBM's LAN Server product more of a threat than the Microsoft LAN Manager offering on which it is based. But last November, intent on advancing OS/2 as the personal computer operating system of choice in the 1990s, IBM and Microsoft agreed to merge the two products and adopt a consistent systems software strategy.

This strategy promises to make LAN Server/LAN Manager a more formidable competitor for Novell's NetWare, especially as IBM rolls out strategic products for LAN Server.

For example, IBM's OfficeVision, its first application under its Systems Application Architecture, was originally made available for LAN Server networks supporting OS/2 and DOS workstations, not for MVS- or VM-based hosts. As IBM develops still more advanced network applications, it may be more difficult for Novell to compete.

The ultimate success of LAN Manager/LAN Server, however, is by no means guaranteed. Novell owns 50% of the installed base of LANs, and Lotus' 1-2-3 spreadsheet is still one of the most important personal computer business tools out there. By tightly coupling their products and adding value through enhancements, the two companies could make it difficult for IBM and Microsoft to catch up.

Whatever the marketplace outcome, the Lotus/Novell merger is an important step that can be expected to accelerate competition for and development of truly advanced network applications.

OPINIONS

NETWORK MANAGEMENT

BY PAUL LI

Who's accepting deposits in the repository?

After years of listening to users' requests for better network management capabilities, major vendors such as AT&T, Digital Equipment Corp., Hewlett-Packard Co. and IBM have finally realized the need to integrate the diverse amount of information required to manage a network.

These companies have developed net management architectures and products that integrate network management information from diverse net management systems, tied together with a friendly user interface.

However, while these products integrate diverse network management systems, they do not integrate all five of the Open Systems Interconnection management functions. They provide integration of fault management and configuration management information only.

The integrated network management products that users desire include a repository data base that provides a central data collection bin from which fault, configuration, performance, accounting and security management can be correlated. A repository makes the network manager's job of proactively managing the network, providing capacity planning, partitioning the network and verifying service-level agreements easier to accomplish.

The repository would aid in correlating the fault, configuration and performance information needed to proactively manage the network.

Capacity planning involves the repository's ability to correlate performance and configuration information. Network partitioning, which allows the network to be divided into different regions, uses the repository's ability to correlate configuration, accounting and security information. Service-level agreements are provided and maintained using the repository's ability to correlate fault, configuration and performance information.

The successful repository will include capabilities some current net management products already have. Besides the fault and configuration information provided in the major vendors' products, the successful repository must also include information processed by administrative management products.

For example, administrative products such as Stonehouse and Co.'s Management of Network Income, Expense and Services (MONIES) and Peregrine Systems, Inc.'s Peregrine Network Management System (PNMS) incorporate the accounting management information that the major vendors do not provide.

> Currently, no single vendor provides a complete repository capability.
>
> ▲▲▲

MONIES, which is voice-oriented, provides features such as billing reconciliation for telephone services. PNMS is oriented toward collecting data network inventory and cost information. Incorporating these capabilities into the repository will result in a comprehensive and complete network management data base.

Currently, no single vendor provides a complete repository capability. IBM's NetView does not even provide a centralized data base of the information it collects. The information available from NetView's Hardware Monitor and Session Monitor is independently stored and accessed. And NetView's information is not integrated with other IBM products that collect management information, such as NetView Performance Monitor.

AT&T's Accumaster Integrator consolidates only fault and configuration information. Similarly, DEC's Enterprise Management Architecture and HP's OpenView will probably integrate only fault and configuration information initially.

IBM has recognized the need for a central data base by announcing the future release of its own repository. IBM's repository will eventually be a source for all network and system information.

AT&T is also evaluating Accumaster Integrator's current data base to see what is needed to provide a repository capability. DEC and HP are still developing their integrated network management products and will need to incorporate a repository data base capability.

The viability of these future repository data bases will depend on their conformance to standards. Any repository used to manage a diverse, complicated network must address the emerging OSI Management Information Base (MIB) standard. MIB support will greatly aid disparate network management systems in exchanging consistent information.

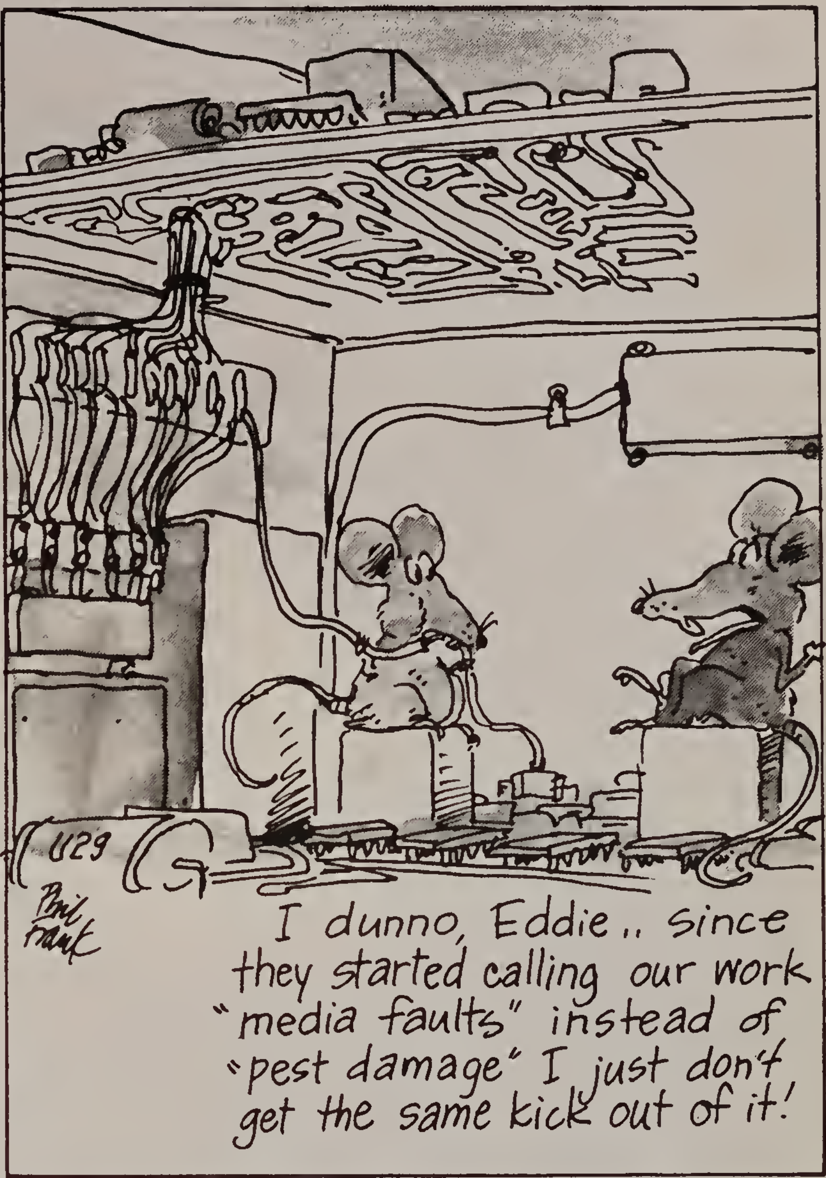
The repository's flexibility includes the data base's architecture, such as relational or hierarchical, and the data base's interfaces, such as SQL. A relational data base provides the user with greater flexibility in customizing reports and correlating between data base fields. An SQL interface would provide a standard interface for both the user and other data bases that interconnect to the repository, which is important in a distributed data base environment.

The winner of the integrated network management war will be decided in the early 1990s. The vendor that establishes the industry standard for a network repository data base will have won the most important battle of all. ◼

Li is a senior consultant with Network Strategies, a network consulting practice of Ernst & Young in Fairfax, Va.

TELETOONS

BY FRANK AND TROISE


1/29
Bill Frank
I dunno, Eddie.. since they started calling our work "media faults" instead of "pest damage" I just don't get the same kick out of it!

LETTERS

Remembering Earth Day

To all hardware and software companies and distributors:

With Earth Day coming up April 22, what better way to show concern for our world than by starting to use recycled paper products?

As a writer and reviewer, I don't recall having seen *any* manuals, product sheets, newsletters or press kits that mentioned they were printed on recycled paper. Can you imagine the number of trees it takes just to print the manuals for WordPerfect Corp.'s WordPerfect, Lotus Development Corp.'s 1-2-3 and Novell, Inc.'s NetWare?

Interactive Development Environments, Inc., a computer-aided software engineering application developer in San Francisco, recycles its paper and uses some recycled paper. Kudos to them!

Are there other companies in our industry using recycled paper? If so, let's find out who they are so we can express our approval.

What company plans to start using recycled paper? Will it be yours?

Your input and additional ideas would be appreciated. Spread the word!

. David Batterson
Independent technical writer
Sausalito, Calif.

Which one to buy?

As was mentioned in our recent article on T-1 and T-3 multiplexer vendors ("Public net compatibility key for T-1, T-3 muxes," *NW,* March 5), public network compatibility is a critical factor in deciding which T-1 and T-3 multiplexers to buy.

Toward this end, we gathered information from more than 40 vendors on a number of related topics. These subjects include specific standards supported by each vendor's products.

Due to space constraints,

(continued on page 58)

Network World *welcomes letters from its readers.*

Letters should be typed, double-spaced and sent to Editor, Network World, *161 Worcester Road, Box 9172, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

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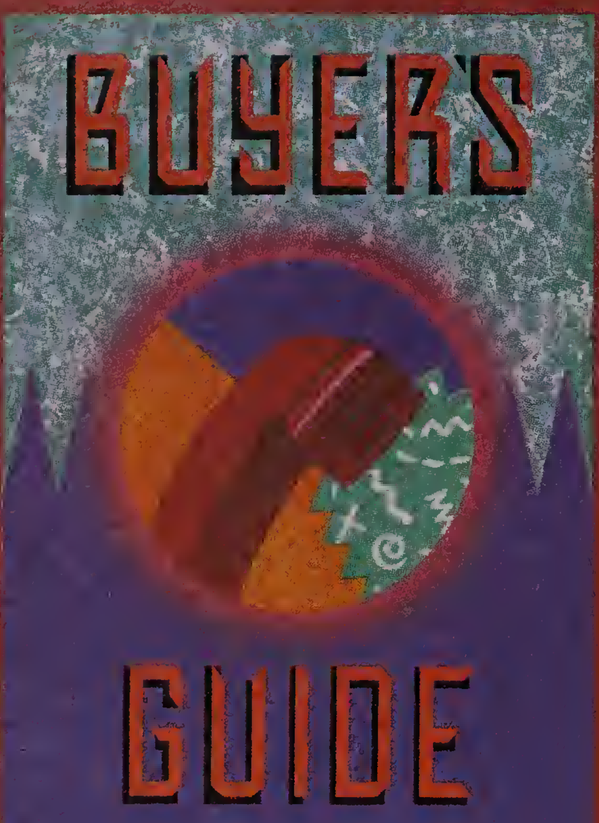

SERVICE AGGREGATORS AND MULTILOCATION BUYING PLANS

Getting it

CONTINUED FROM PAGE 1

sion to purchasing long-distance service. Technically, any long-distance provider that does not own all of its own facilities could be termed an aggregator of sorts, simply because the carrier is combining customer traffic on leased facilities to yield the cost economies that allow it to survive. Thus, there are different levels of service aggregation.

Service aggregators first started appearing in response to the 1988 introduction of AT&T's Multi-Location Calling Plan for outbound service and Revenue Volume Pricing Plan (RVPP) for inbound calling. The original intent of these tariffs was to allow customers at the high end of the market to combine usage in order to gain discounts they would not be able to achieve individually.

When AT&T filed these discount plans, it did not intend for them to be used by aggregators. But innovative telecommunications entrepreneurs took advantage of these multisite offerings to form aggregation groups.

Here's how it works: Each of the carriers gives users higher discounts for greater levels of monthly usage. At the same time, the tariffs allow companies with

CHART • GUIDE

A *Network World* Buyer's Guide chart comparing the multisite discount plans of long-haul carriers begins on page 43. A chart on telecom service aggregators and buying groups starts on page 45.

Briere is president and Langner is an associate of TeleChoice, Inc., a Manchester, Conn., telecommunications consultancy. They can be reached at (203) 645-0471.

together

multiple locations to group their traffic to obtain higher discounts.

In the past, volume discounts necessitated carrying traffic over the same dedicated facilities. In this new environment, however, such dedicated facilities are not required; combined traffic from companies with multiple sites does not have to travel over the same facilities.

Since the carriers are bound by the Federal Communications Commission to make their products available to all businesses in a nondiscriminatory manner, it is difficult to allow one company to aggregate traffic from its seven satellite sites under one plan and not allow a service aggregator to group seven unrelated sites under that same plan.

What's in it for the carrier?

Service aggregation enables carriers to pursue all of a customer's traffic by bringing all sites and traffic under one pricing plan. This can help AT&T in its fight to win back lost accounts. Service aggregation also allows carriers to offer a more competitive service option than what is usually available to a small or midsize end user.

Aggregators also have a degree of expanded market coverage that is unrivaled by existing carrier sales forces.

Long-distance carriers have relied on third-party marketing firms to sell their products, either through reselling or rebilling agreements or agencies.

For instance, MCI Communications Corp. forged an early relationship with Amway Corp., famous for its door-to-door sales force selling everything from combs to water filters. Under third-party marketing, the carrier provides the service and sometimes the billing, while the outside marketer does the selling using cost margins as a source of revenue.

Most industry observers say AT&T is driving the service aggregation market, taking a proactive stance given the present market environment, although AT&T did not intend for its services to be aggregated by unrelated groups.

Most aggregators offer just AT&T services, mainly because AT&T tariffs are open to aggregation. Also, since AT&T has 75% or more of the total network services revenues, it makes sense that an aggregator would choose AT&T's services.

While MCI and US Sprint Communications Co. have been working in the legal, sales and regulatory realms to prevent

(continued on page 48)

Telecom service aggregators could be in for a rough time. But for now, they offer users a cost-effective option.

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General DataComm

Long-haul carrier multisite discount plans (continued on page 44)

Company	Plan	Subaccount relationship requirements	Products covered by plan	Customer invoices billed by/ sent to	Ultimate financial responsibility	Entity remitting payment	Entity belongs to	Master account contract length required	Plan installation fees	Monthly subscription fees	Monthly subscription fees paid by	Master account/ subaccount location monthly minimums	Discounts available (8)
AT&T Basking Ridge, N.J. (800) 222-0400	Multi-Location Calling Plan (MLCP)	None	AT&T Megacom, AT&T Pro WATS, AT&T Pro WATS III, AT&T WATS	IXC/subaccounts	Master account	Subaccounts	Customer of record	1 year	$10 order fee (some promos waive fee)	Based on number of locations: $2,500 for 0-25; $2,000 for 26-47; $1,500 for 48-60; $1,000 for 61-71; $0 for 72+ (AT&T Megacom counts 24 locations)	Master account	None	Maximum usage discounts applied regardless of volume; AT&T WATS: 15% for day, 5% for evening; AT&T Megacom: 10%; AT&T Pro WATS: 10%
	Revenue Volume Pricing Plan (RVPP)	None	AT&T 800 service, AT&T Megacom 800, AT&T Readyline, AT&T MultiQuest, AT&T MultiQuest High Capacity, AT&T Dial-It 900 (2)	IXC/subaccounts; summary to master account	Master account	Subaccounts	Customer of record	None	$1,500	None	NA	None	Varies by monthly usage charges: tapered discounts, 0% to 6%
	800 Customer Specific Term Plan (CSTP)	None	AT&T 800 service, AT&T Megacom 800, AT&T Readyline, AT&T 800 Validator; customer must subscribe to RVPP (2)	IXC/master account or subaccounts	Master account	Master account or subaccounts	Customer of record in RVPP	3 years	None	None	NA	Account: $50,000	Highest usage discount for the 800 service plus 6% for year 1; 7% for year 2; 8% for year 3
	SDN Expanded Volume Plan Multiple Account Billing	None	SDN	IXC (up to 6,000 locations; customer of record)/ master account or subaccounts	Master account; with Location Account Billing Option, each location is liable; master account liable for short fall	Master account or subaccounts	SDN customer of record	1 month to 4 years	Varies by commitment: $0 to $40,000	None	NA	Annual minimum guarantees of 4 million to 600 million minutes, depending on term plan chosen	Varies by term plan chosen: 5% to 27%
	Commercial Affiliation Program	Trade association membership or commercial organizations with affiliated franchises, independent agents or other commercial representatives	Pro WATS, all Pro WATS where available and/or facsimile discounts, PC discounts, product financing	IXC/subaccounts	Subaccounts	Subaccounts	Customer of record	1 year for association contract; no contract for individual members	None	None	None	$75 per member per month on average	Services: varies with usage, calling patterns, etc.; 10% to 26% average over basic day long-distance rates; no monthly or service order charge for association members; 10% for all Pro WATS; 20% to 25% for products
	Multi-Service Volume Pricing Plan	None	Accunet T1.5, Accunet T45, Dataphone Digital Service, Accunet Spectrum of Digital Services	IXC/master account or subaccounts	Master account	Master account or subaccounts	Customer of record	1 to 5 years	None	None	NA	Commitments of $10,000, $50,000, $100,000, $200,000, $350,000, $500,000, $750,000 or $1 million	Varies by service, revenue commitment and time; ranges from 4% to 56%
Cable & Wireless Communications, Inc. Vienna, Va. (800) 486-8686	Corporate Account Program (CAP)	Must be owned, franchised, managed or directed by the master account	Focus I, II and III; Excel; Long Distance Service; International; Travel; Travel WATS; International Travel; 800	IXC/master account or subaccounts	Master account	Master accounts or subaccounts	IXC	None	None	Varies according to size of customer	Master account	Account: varies according to size of customer	Varies by monthly usage and plan size; up to 20% discount off rates
MCI Communications Corp. Washington, D.C. (800) 888-0800	Corporate Account Service (CAS)	Must be owned, franchised, managed or directed by the master account	Execunet, MCI Card, Prism Plus, Prism III, II, and I, MCI WATS (6)	IXC/master account or subaccounts	Master account	Subaccount, master account or designated locations	IXC	None	None	$100 (waived if gross usage exceeds $2,500) (3)	Master account	None	No cross-service discount; each service has a unique discount structure associated with it; services receiving special discounts under CAS are Execunet, MCI Card and Prism Plus and range up to 14%
	CAS Plus (Option A)	Must be owned, franchised, managed or directed by the master account	Execunet, MCI Card, Prism Plus, Prism III, II, and I, MCI WATS (6)	IXC/master account or subaccounts	Master account	Subaccount, master account or designated locations	IXC	1 year (7)	None	$1,500 (waived if gross usage exceeds $15,000) (3)	Master account	None	No cross-service discount; each service has a unique discount structure associated with it; services receiving special discounts under CAS Plus are Execunet, MCI Card, Prism Plus and Prism I and range up to 22%
	Value Insurance Plan — CAS Plus (Option C)	Only available for locations under "common control"	MCI 800	IXC/subaccount	Master account	Subaccount	IXC	1, 2 or 3 years	None	$1,500 (only applies to 1-year term; $0 for 2- or 3-year term; waived if usage exceeds $15,000)	Master account	Multiple options: join CAS or CAS Plus Option A for 1 year; join CAS or CAS Plus with monthly discounted minimum of $40,000 on 800 service for a 1-year term; for a 2- or 3-year term, minimums are $500 per month per MCI terminal for switched access, or $5,000 per month per terminal for dedicated access line access, or $40,000 per month	Varies by term commitment and access type: 14% to 29% discount can combine with 800 Multi-Option, CAS and CAS Plus

IXC = Interexchange carrier
NA = Not applicable
SDN = AT&T Software-Defined Network

FOOTNOTES:

(1) If customer has UltraWATS on term plan at any location, fee is $600.
(2) The customer of record cannot include a location- and service-specific term plan with a Customer Specific Term Plan under the same RVPP.
(3) Initial three-month grace period to meet minimum.
(4) Depends on the relationship of the intermediary group to the carrier. If the intermediary is a reseller/rebiller, end user is a customer of that account and US Sprint does not receive money or send bills to that end user. If the intermediary is a sales agent, end user is US Sprint's customer and treated as such — the agent merely receives a commission check. With associations, buying co-ops or affinity groups, the intermediary receives no commission checks and has no customers; each end user is deemed a client of US Sprint.
(5) If not met after 18 months, MCI will cease taking on new plan customers and plan will stop after 24 months. All current customers will revert to regular MCI service.
(6) Customer must have two or more locations enrolled in plan, or have two or more products in plan.
(7) Initial 90-day escape clause.
(8) Check with carrier as to whether discounts listed are in addition to or in lieu of standard discounts.
(9) A location enrolled in the Ultra 800 Term Plan will not contribute to or be eligible for the Network WATS Ultra 800 discount plan.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

Long-haul carrier multisite discount plans (continued from page 43)

Company	Plan	Subaccount relationship requirements	Products covered by plan	Customer invoices billed by/ sent to	Ultimate financial responsibility	Entity remitting payment	Entity belongs to	Master account contract length required	Plan installation fees	Monthly subscription fees	Monthly subscription fees paid by	Master account/ subaccount location monthly minimums	Discounts available (8)
MCI Communications Corp. Washington, D.C. (800) 888-0800	Network Pricing Plan	None	All dedicated private lines	IXC/master account	Master account	Master account	Master account	1 to 5 years	None	None	NA	Account: various revenue commitments: $10,000-$750,000	Varies according to term, line type and monthly revenue commitments: 3% to 56%
	Residential Affinity Plan	Employer/ employee; alumni association members	MCI Dial 1 (Execunet) and Credit Card Service	IXC/subaccounts	Subaccounts	Subaccounts	IXC	2 years by master account	None	None	NA	Account: $20,000 (5)	5% off all domestic revenue
	Commercial Affinity Plan (Options A and B)	Corporate entities, bona fide associations, franchises, buying groups not set up just for volume discounts, groups with business in common	MCI Dial 1 (Execunet), Prism Plus and Credit Card Service; Prism I available under Option B	IXC/subaccounts	Subaccounts	Subaccounts	IXC	1 year by master account	None	None	NA	Option A: $20,000 per account, average of $35 per location; Option B: $200,000 per account, average of $75 per location	3% to 20% discounts, depending on service and monthly usage levels; Prism Plus locations receive tiered discounts based on usage; Execunet customers get across-the-board discounts; Prism I customers get 11% discount off domestic and standard period international
	800 Multi-Option Discount Plan	May be under different corporate IDs, but must be under "common control"	800 service	IXC/subaccounts	Master account	Subaccounts	IXC	None	$1,500	None	NA	None	5% off billing over $50,000
	Vnet Service — Network Savings Plan I, II, III, or IV	Customer must own, franchise or manage Vnet location	Vnet Service	IXC/master account or subaccounts	Master account	Master account or subaccounts	Master account	1 to 3 years	Basic feature package: $5,000, waived with certain plans	None	NA	Account: $25,000 plus 5% on-net termination for Vnet Card	Varies according to length of term commitment: 0% to 31.4%
Telecom*USA, Inc. Atlanta (800) 868-2600	Corporate Billing — Master Only Remittance	Corporate entities or bona fide associations	All switched products	IXC/master account	Master account	Master account	Master account	None	$250	$50	Master account	Account: $1,000; location: $25	No unified cross-service discount plan; each service discounted according to volume in that service; discounts range from 5% to 15% for most services; discounts peak at 20% for equal access WATS products
	Corporate Billing — Subaccount Remittance	Corporate entities or bona fide associations	All switched products	IXC/subaccounts	Master account	Subaccounts	IXC	None	$250	$50	Master account	Account: $1,000; location: $25	No unified cross-service discount plan; each service discounted according to volume in that service; discounts range from 5% to 15% for most services; discounts peak at 20% for equal access WATS products
	Private Line Volume Pricing Plan	None	Fiberlink 1.5, Flex-Link (fractional T-1)	IXC/master account or subaccounts	Master account	Master account or subaccounts	Customer of record	1 year minimum; contract length of up to 5 years available	None	None	NA	Commitments of $10,000, $20,000, $35,000, $50,000, $100,000, $200,000, $300,000 or $500,000; volume commitment is based on total private-line services	Varies according to type of service, contract length and revenue commitment; ranges from 4% to 47%
US Sprint Communications Co. Kansas City, Mo. (800) 347-3300	Network WATS	None	Dial 1 WATS, UltraWATS, FONCard, FONLine 800, Ultra 800 (9)	Depends on relationship (4)/master account or subaccounts (4)	Master account or subaccounts (4)	Master account or subaccounts (4)	IXC or master account (4)	None	None	Outbound: $1,000 (waived with usage above $15,000); inbound: $250 (1)	Master account	None	15% across all listed products
	Network WATS Term Plan	None	Dial 1 WATS, UltraWATS, FONCard, FONLine 800, Ultra 800 (9)	Depends on relationship (4)/master account or subaccounts (4)	Master account or subaccounts (4)	Master account or subaccounts (4)	IXC or master account (4)	2 years, only applicable to UltraWATS usage	None	Outbound: $600 (waived with usage above $15,000); inbound: $250	Master account	Location: $3,500	Offered in tandem with Network WATS: provides 20% discount for UltraWATS; 15% across all other listed products; customer must bill at least $5,000 in UltraWATS usage per location to get the additional discount at that location
	Clearline 1.5 Volume Pricing Plan	None	Clearline 1.5	IXC/master account or subaccounts	Master account	Master account or subaccounts	Master account	1 year; contract lengths up to 5 years available	None	None	NA	Account: $10,000 monthly IXC charges; customers are not required to commit to a specific dollar volume; discounted rates are applied automatically based on monthly IXC charges	Varies according to contract duration and monthly IXC volume: 30% to 58% discount off monthly base rates
	VPN	None	VPN	IXC/master account or subaccounts	Master account	Master account or subaccounts	Master account	1 month to 2 years	Varies by contract length: $0-$10,000	None	NA	Varies by feature package option: $0-$1,500	Varies by monthly usage and contract length: 0% to 38% discounts; to get discount, must have 5% on-net traffic; 15% Network WATS discount with no fee for all FONLine 800 and/or Ultra 800 Service usage
US Sprint Kansas City, Mo. (816) 943-3253	Association Member Benefit Program	Must be members of association	Dial 1, Dial 1 WATS, FONCard	IXC/subaccounts	Subaccounts	Subaccounts	IXC	1 year	None	None	NA	None	Dial 1 and FONCard : 10% day, 4% evening, 3% night/weekend; Dial 1 WATS: 5% day

IXC = Interexchange carrier
NA = Not applicable
SDN = AT&T Software-Defined Network

FOOTNOTES:

(1) If customer has UltraWATS on term plan at any location, fee is $600.
(2) The customer of record cannot include a location- and service-specific term plan with a Customer Specific Term Plan under the same RVPP.
(3) Initial three-month grace period to meet minimum.
(4) Depends on the relationship of the intermediary group to the carrier. If the intermediary is a reseller/rebiller, end user is a customer of that account and US Sprint does not receive money or send bills to that end user. If the intermediary is a sales agent, end user is US Sprint's customer and treated as such — the agent merely receives a commission check. With associations, buying co-ops or affinity groups, the intermediary receives no commission checks and has no customers; each end user is deemed a client of US Sprint.
(5) If not met after 18 months, MCI will cease taking on new plan customers and plan will stop after 24 months. All current customers will revert to regular MCI service.
(6) Customer must have two or more locations enrolled in plan, or have two or more products in plan.
(7) Initial 90-day escape clause.
(8) Check with carrier as to whether discounts listed are in addition to or in lieu of standard discounts.
(9) A location enrolled in the Ultra 800 Term Plan will not contribute to or be eligible for the Network WATS Ultra 800 discount plan.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

Telecom service aggregators and buying groups (continued on page 46)

Company	Company type	Time in aggregation business	Time in business	Services aggregated	Carriers aggregated	Plans presently used	Intrastate service available	Onetime installation fees	Monthly fees per account and location	Annual fees per account and location	Contract length required	Discount sharing plan with customer	Other services offered	Other products aggregated
ACOMM, Inc. Minneapolis (800) 321-6551	Service aggregator	11 months	11 months	WATS, 800, travel card, virtual network	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	Varies by volume, combination of services, number of locations; average: $0 to $150	None	Month-to-month	MLCP: 100%; 800: 100%; SDN: negotiated with customer	Network design using AT&T services; also recommendations on equipment and vendors if required	None
ADI Alexandria, Va. (703) 820-9200	Service aggregator	8 months	6 years	WATS, 800, travel card, private line	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	$125	None	None	None	Profit sharing negotiable on a customer-specific basis	Consulting services	None
ADNET La Mirada, Calif. (714) 994-4400	Service aggregator	8 months	12 years	WATS, 800, travel card, private line	AT&T	AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	Varies according to contract length: 40% to 50% of savings for which ADNET is responsible	None	1 to 36 months	50% to 60% of savings created by joining group	Network design; T-1 facilities management; voice and data consulting; monthly "Network Alert" publication	Newbridge Networks Corp.'s products; Infortext Systems, Inc.'s Call Accounting
Affinity Network, Inc. Los Angeles (213) 383-8265	Rebiller	9 months	3 years	SDN	AT&T	AT&T SDN	Yes	None	None	None	1 month	Affinity has its own tariffs, which reflect a portion of the discounts it receives	None	None
AmeriTel 800 Austin, Texas (800) 447-1622	Service aggregator	1 year	14 months	WATS, 800	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	MLCP: $16 to $66, depending on usage; 800: 10%, 15% or 20% of gross savings based on customer volume usage	None	Month to month	100%	None	None
COMAC, Inc. Easton, Pa. (800) 233-1550	Service aggregator	17 months	12 years	WATS, 800, travel card	AT&T	AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	Varies by volume; MLCP: $25 to $75; 800: $20 to $200	None	Month to month	100%	None	None
Comtrol Corp. Users Group Lisle, Ill. (708) 515-0707	Service aggregator, rebiller	15 months	24 years	WATS, 800, travel card	AT&T, US Sprint	AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan, US Sprint Network WATS, US Sprint Network WATS Term Plan	Yes	None	Varies by volume or flat rate; variable: 25% to 50% of savings created by joining group; flat rate: $50 to $300	None	1 year	100%	System analysis; voice/data integration; computer-aided analyses; voice/data wiring plan development	None
Consolidated Communications Group, Inc. Charlotte, N.C. (704) 533-7185	Service aggregator	11 months	26 months	WATS, 800	AT&T	AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	35% of improved discount (1)	None	None	100%	None	None
Consortium 2000, Inc. Marina del Rey, Calif. (213) 827-4200	Service aggregator	14 months	14 months	WATS, 800, travel card, private line	AT&T, MCI, Telecom*-USA, Cable & Wireless	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, MCI Vnet, Cable & Wireless Corporate Account Plan (CAP), Telecom*USA Corporate Billing	Yes	None	None	Based on a percentage of guaranteed savings	1 to 60 months	Annual profit-sharing plan, levels based on volume per specific company	Consulting, network optimization, implementation management, voice mail, T-1 hardware	Conference calling, E-mail, data, fax
The 800 Advantage Group Rolling Meadows, Ill. (800) 525-1644	Service aggregator, rebiller	9 months	10 years	WATS, 800, virtual network	AT&T, US Sprint	AT&T SDN, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan, US Sprint VPN	Yes	None	None	None	30 days	Pass all of the 21% term discount to customer and keep RVPP discount as participation fee	Application-specific consulting in health care industry	None
The 800 Association, Inc. Pottstown, Pa. (215) 327-4404	Service aggregator	1 year	18 months	WATS, 800	AT&T	AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	Negotiable by customer	10% to 20% of savings created by joining group	Negotiable by customer	None	100%	Consulting services	None
Equal Access Corp. — Equal Net Los Angeles (800) 736-3533	Service aggregator	8 months	4¼ years	WATS, 800, travel card, private line, virtual network, high-bandwidth lines for video or data	AT&T	AT&T SDN, AT&T MLCP	Yes	None	None	None	1 month	Customer retains percent of discount created by joining group based on volume up to 60%	A range of 0+ and 1+ services, including hospitality services, payphone and charge-a-fax services; also sells and leases equipment, video-conferencing equipment, inmate phone systems	Payphone traffic, pay faxes, inmate phone systems, hotel and hospital systems

MLCP = Multi-Location Calling Plan
NA = Not applicable
RVPP = Revenue Volume Pricing Plan
SDN = AT&T Software-Defined Network
VPN = Virtual Private Network

FOOTNOTES:

(1) The monthly administrative fee of 35% of the improved discount is billed 90 days in arrears. The improved discount is determined by crediting each account with 17½%, which is subtracted from the 21% Customer Specific Term Plan, resulting in a 3½% improvement. To this number, the RVPP discount of 5% is added. The fee is 35% of that number.
(2) Garden State is (a) a facilities-based carrier, (b) an AT&T aggregator for MLCP, Customer Specific Term Plan and 800 RVPP, and (c) an AT&T SDN reseller.
(3) Westinghouse offers Phoenix Network's network management services. Phoenix uses Westinghouse's network exclusively to carry its traffic.

The following companies are known to aggregate traffic but chose not to be included in our survey: Centex Telemanagement, Inc. and Progressive Communications, Inc. Any companies not listed on this chart, please call TeleChoice at (203) 645-0471, so that you may be included in future charts.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

Telecom service aggregators and buying groups (continued from page 45)

Company	Company type	Time in aggregation business	Time in business	Services aggregated	Carriers aggregated	Plans presently used	Intrastate service available	Onetime installation fees	Monthly fees per account and location	Annual fees per account and location	Contract length required	Discount sharing plan with customer	Other services offered	Other products aggregated
The Furst Group Vincentown, N.J. (800) 233-4736	Service aggregator agent	10 months	11 years	WATS, 800, travel card, virtual network	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	AT&T SDN: none; AT&T MLCP: $5 to $250 per month; 800: percentage of savings created by joining group	None	Up to 6 months	Pass on base rates plus 55% of Expanded Volume Pricing/Usage Reduction Plan on SDN; MLCP/800: 100%	Consulting services	None
Garden State Long Distance Telephone Morristown, N.J. (201) 539-6900	Service aggregator, reseller, carrier (2)	1 year	10 years	WATS, 800, travel card, private line, virtual network	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan, Garden State Long Distance	Yes	$0 to $50	Negotiated percentage of savings: 20% to 28% of savings created by Garden State	None	30 days	MLCP/800: 100%; SDN: negotiable	Consulting, network optimization	Cellular service
Group Long Distance (USA), Inc. Freehold, N.J. (201) 409-3000	Service aggregator	17 months	8 years	WATS, 800, travel card, private line	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan, local exchange carrier discount plans	Yes	Varies by total dollar volume and actual customer savings, number of locations and features required on network	None	None	30 days	NA	Free audit of telecom inventory and services, toll analysis software and service, automated message management systems, tariff update services	Public pay telephone, public facsimilie machines
International Telecom Group Cleveland (800) 344-2046	Service aggregator	13 months	7½ years	WATS, 800, travel card, private line, virtual network	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	Flat fee or variable percent; flat fee: $35+; variable: 50% of savings created by joining group	None	3 months	800: 100%; SDN: customers negotiate specific percentage agreement	Aggregation Manager: provides implementation and consulting services for aggregators. Services include order processing, computer tracking, turnkey start-up; also provide general telecommunications consulting services; sell channel banks	None
Mid-Com Associates Seattle (800) 237-9122	Service aggregator	17 months	26 years	WATS, 800, SDN	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	Varies by volume: $0 to $200	Varies by customer; MLCP: $35 to $300; RVPP: varies by volume	None	Up to 3 years	Negotiable: pass 50% of discount in most cases	Consulting service	None
Phoenix Network, Inc. Sausalito, Calif. (415) 332-3030	Rebiller	5 years	5 years	MTS, WATS, travel card, T-1	AT&T, MCI, US Sprint (3)	AT&T SDN, MCI Vnet, US Sprint VPN, US Sprint Network WATS, US Sprint Network WATS Term Plan	Yes	None	None	None	None	NA, customer billed at Phoenix Network rate	None	None
Pentzer Corp. Spokane, Wash. (509) 482-4202	Service aggregator	10 months	5¼ years	WATS, travel card	AT&T	AT&T MLCP	Megacom WATS: yes; WATS: no; Pro WATS: no	$25 per billing address	Varies by customer based on last three months: $10 to $250	None	30 days	100%	None	None
Phone America Corp. (PACO) Conyers, Ga. (404) 760-1858	Service aggregator	1 year	1 year	WATS, travel card	AT&T	AT&T MLCP	Yes	Varies by customer: 10% to 40% of total savings	Varies by customer: 10% to 40% of total savings	Varies by customer: 10% to 40% of total savings	Negotiable	100%	None	None
TeleCom Technologies, Inc. Oak Brook, Ill. (708) 990-6800	Rebiller	1 year	4 years	WATS, 800, travel card, private line (T-1)	AT&T	AT&T SDN	Yes	None	None	None	30 days	No, customer billed at TeleComp Technology rates	Electrical contracting specializing in voice and data wiring, including fiber installation; AT&T premises distribution reseller	Centrex
Telepool Network, Inc. Minneapolis (800) 535-2993	Service aggregator	4 years	4 years	WATS, 800, travel card, virtual network	AT&T	AT&T SDN, AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	None	Varies based on type of service used: $50 to $300	None	None	100%	None	None
Value Network Group Southlake, Texas (817) 488-2575	Service aggregator	2½ years	10¾ years	MTS, WATS, 800, travel card, private line	AT&T, MCI, Telecom*-USA, National Telecommunications, Inc.	AT&T SDN, AT&T MLCP, MCI Vnet, Telecom*USA Corporate Billing, National Telecommunications, Inc. Plan	Yes	None	$10 per equal access account	None	1 year	Varies based on volume; consortium members receive monthly rebate	Sells and rents T-1 equipment	None
The WATS Association Burlingame, Calif. (415) 579-1271	Service aggregator subaggregator	8 months	2½ years	WATS, 800	AT&T	AT&T MLCP, AT&T 800 RVPP, AT&T 800 Customer Specific Term Plan	Yes	MLCP: $0; RVPP: $125 per client	800: varies based on usage; MLCP: $5 to $250	None	30 days	100%	Sells AT&T telephone equipment	None

MLCP = Multi-Location Calling Plan
MTS = AT&T's Message Toll Service
NA = Not applicable
RVPP = Revenue Volume Pricing Plan
SDN = AT&T Software-Defined Network
VPN = Virtual Private Network

FOOTNOTES:

(1) The monthly administrative fee of 35% of the improved discount is billed 90 days in arrears. The improved discount is determined by crediting each account with 17½%, which is subtracted from the 21% Customer Specific Term Plan, resulting in a 3½% improvement. To this number, the RVPP discount of 5% is added. The fee is 35% of that number.

(2) Garden State is (a) a facilities-based carrier, (b) an AT&T aggregator for MLCP, Customer Specific Term Plan and 800 RVPP, and (c) an AT&T SDN reseller.

(3) Westinghouse offers Phoenix Network's network management services. Phoenix uses Westinghouse's network exclusively to carry its traffic.

The following companies are known to aggregate traffic but chose not to be included in our survey: Centex Telemanagement, Inc. and Progressive Communications, Inc. Any companies not listed on this chart, please call TeleChoice at (203) 645-0471, so that you may be included in future charts.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

“Our customer has a good idea.

He wants to offer full service banking at every branch. But how can he do it without duplicating his departments? With the equipment we sell and our central office-based services. This lets him centralize his operations with a single communications network. So his staff's expertise can work where it's needed most, when it's needed most. I want to use our technological leadership to help the customer improve productivity overall. And with our people and depth of resources, I can do that.”

Bob Morris, South Central Bell

South Central Bell's The One To Turn To.

South Central Bell®

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See the FAXNeT Form on Page #61

(continued from page 41)

service aggregation, AT&T has been validating some aggregators to resell AT&T services. AT&T has at least six multilocation, and in some cases multiservice, discount plans that aggregators can use to obtain higher discounts.

However, problems have quickly arisen as aggregators have targeted AT&T's larger accounts. After all, the fastest way to get to higher discount levels is by signing large accounts. Aggregation has created conflicts in the sales organization — aggregators sometimes underbid the carrier's own sales personnel using that carrier's products but with better pricing and more flexible contract terms. Also, as multilocation WATS customers switch to Software-Defined Network (SDN) service, their revenue leaves the local sales region and goes to New Jersey, out of the hands of local salespeople. Predictably, salespeople have been upset.

Service aggregation plans

Figure 1

Service aggregators are using a number of different services to combine traffic and gain larger discounts. Among the more popular plans are:

- ☎ AT&T Software-Defined Network
- ☎ AT&T Multi-Location Calling Plan
- ☎ AT&T Revenue Volume Pricing Plan
- ☎ AT&T 800 Customer Specific Term Plan
- ☎ AT&T Tariff 12
- ☎ MCI Communications Corp. Vnet
- ☎ US Sprint Communications Co. VPN
- ☎ US Sprint Network WATS
- ☎ US Sprint Network WATS Term Plan
- ☎ Cable & Wireless Communications, Inc. Corporate Account Program
- ☎ Telecom*USA, Inc. Corporate Billing

Each of these services is detailed in the chart beginning on page 43.

GRAPHIC BY SUSAN SLATER

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

AT&T has made it very clear to its outside marketers that certain areas, such as large accounts, are off-limits to aggregation. AT&T has gone so far as to make some of its products less attractive to high-end aggregation through various tariff changes.

Last year's changes to AT&T's RVPP were explicitly targeted at making it easier for customers with revenue greater than $50,000 per month to get their own discounts; AT&T basically took away the margins in high-end aggregation for that product. AT&T has made similar changes to SDN to make that product unattractive to residential aggregation.

In our analysis, AT&T apparently wants aggregators to target customers that spend in the range of $500 to $5,000 per month. Indeed, our survey found that the typical aggregator's average customer spends $3,650 per month in usage.

However, both MCI and US Sprint have taken steps to ban use of their services in such a capacity. In recent months, both carriers have been adjusting their definitions of "customer" in an attempt to rule out service aggregation.

For example, according to the latest language for one of MCI's services, a customer is defined as "a trade association representing business entities or individuals within an industry, professional or business classification; or a commercial organization with affiliated franchises, independent agents, independent distributors or other multiple commercial representatives; or a buying group not organized for the purpose of qualifying for the discounts provided for herein."

Both MCI and US Sprint have complained to the FCC about AT&T's attitude toward aggregation, complaints AT&T has dismissed as unwarranted. It comes down to the FCC ruling on whether AT&T can legitimately promote aggregation through its tariff structures. The FCC is now considering releasing AT&T from regulation, so a ruling barring aggregation is not likely to occur.

One of the most controversial issues before the FCC is MCI's claim that AT&T is targeting MCI and US Sprint accounts through its aggregator programs. MCI's filings contain examples of contractual requirements AT&T has with aggregators stating that, to stay enrolled in a particular aggregation program, the aggregator must win specific levels of traffic away from MCI and US Sprint.

AT&T maintains to the FCC that such requirements do not exist. AT&T says that it certainly encourages such win-backs but has not specified exact levels for each aggregator.

Aggregators sometimes underbid the carrier's own sales personnel.

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State public service commissions (PSC) are receiving pressure from regulated resellers and rebillers to start regulating aggregators as well. In the absence of equal regulation, these resellers and rebillers are feeling the squeeze to convert to being service aggregators themselves, something all supplier carriers, even AT&T, want to avoid.

In fact, some national companies that consider themselves telemanagement firms refused to be included in this survey for fear that being listed with service aggregators would change their perceived status to that of reseller. In reality, most of these telemanagement firms *are* service aggregators by the definitions used here.

PSCs are watching some service aggregators for violations of other business-related regulations.

For instance, the state attorney general's office in West Virginia recently sued National Communications Network, Inc. of Gilbert, Ariz., claiming the company tried to start a "pyramid" marketing scam, similar to chain letters, using service aggregation. Company brochures explained that salespeople could earn a new Mercedes-Benz car or a free trip for two anywhere in the world by signing up additional sales personnel or meeting sales goals.

Checking out aggregators

Treat a service aggregator as you would any long-distance company coming through your door with a sales pitch. Before signing, ask the following questions:

■ **Whose customer will I be?** Who do I call with a service problem? Am I still a customer of the carrier or a customer of the aggregator? This is the most crucial question you can ask, and the answer can change over time.

Many aggregators will tell you that nothing about your relationship with your carrier will change, but this may not be the case. In general, AT&T is shifting its stance over who it considers its customer — the end user or the aggregator. AT&T used to consider the end user as its customer. Now, the end user may be the customer of the aggregator, depending on the service for which the end user has signed up.

For example, if you are an SDN customer and you shift to a partition of an aggregator's SDN, you will lose your AT&T account team and become a customer of the aggregator, which means you must use the aggregator's customer service representatives to deal with its SDN account team.

■ **How long has the company been in business?** Is this a start-up firm whose sole purpose is to aggregate discounted traffic, or does it have a solid corporate history in another aspect of telecommunications?

If the aggregator says it uses a virtual net, be sure to ask if it is currently installed.

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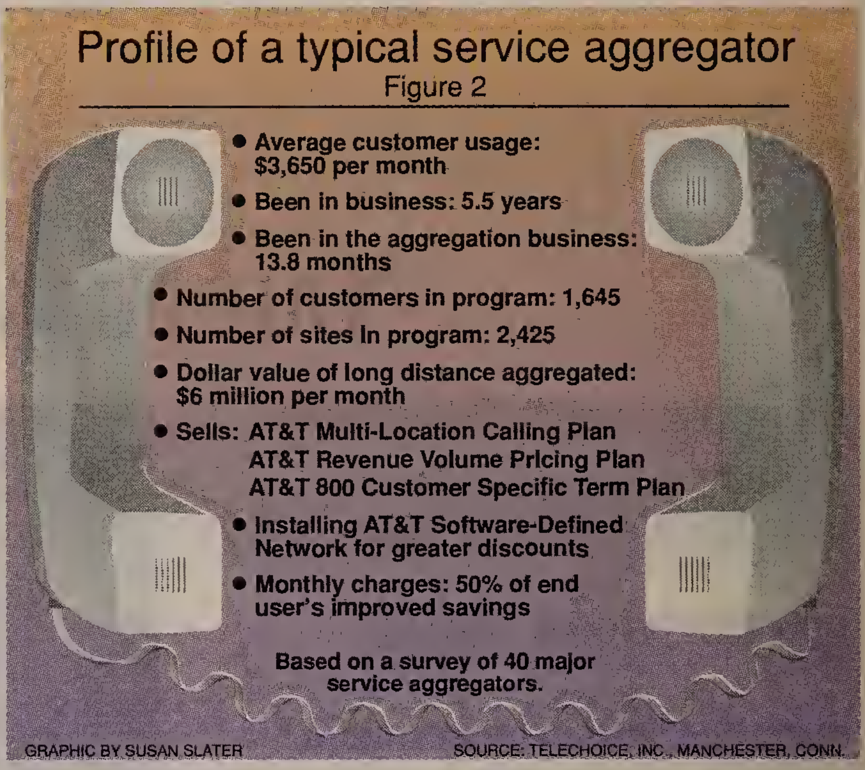
It's best to choose a firm that has been in the business the longest and knows about other aspects of communications. This is not to imply that the age of the company is the only issue. Some younger companies' personnel have a great deal of telecommunications experience as well. For example, will they analyze your network before recommending a solution? Will this cost extra?

■ **How long has the company been aggregating traffic?** Older aggregators tend to have larger traffic portfolios. This is not always true, however. Some firms have large amounts of traffic because of their other areas of business. For instance, when Equal Access Corp. became an aggregator, it already had an embedded base of 1+ and 0+ customers.



Profile of a typical service aggregator

Figure 2

- **Average customer usage: $3,650 per month**
- **Been in business: 5.5 years**
- **Been in the aggregation business: 13.8 months**
- **Number of customers in program: 1,645**
- **Number of sites in program: 2,425**
- **Dollar value of long distance aggregated: $6 million per month**
- **Sells: AT&T Multi-Location Calling Plan**
  AT&T Revenue Volume Pricing Plan
  AT&T 800 Customer Specific Term Plan
- **Installing AT&T Software-Defined Network for greater discounts**
- **Monthly charges: 50% of end user's improved savings**

Based on a survey of 40 major service aggregators.

GRAPHIC BY SUSAN SLATER

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

■ **From what carriers does the company resell services?** Most firms sell only AT&T services. If you aren't already an AT&T customer, you will have to convert to AT&T. Many companies don't want to depend on only one carrier. A truly flexible aggregator will offer you a choice. But AT&T tries to limit multicarrier aggregation; remember that aggregators give AT&T a shot at getting all of a company's traffic.

■ **What services from those carriers does the company resell?** Some aggregators only resell WATS or 800 services; others will sell virtual networks, travel cards and other local or long-distance services (see Figure 1, this page). If the aggregator says it uses a virtual network, be sure to ask if it is currently installed. Nowadays, it takes about six months to get a virtual network installed.

Surprisingly few aggregators will help you obtain discounts for private-line services, although this could change in the near future because of the huge margins that exist in private-line term plans. Most will merely help you place orders for the service through the existing account. In all, you're better off giving all of your traffic to an aggregator that can handle most of your business.

■ **Is the aggregator a subaggregator for any other company?** Some aggregators have signed other aggregators to be part of their discount plan. If you sign with a subaggregator for AT&T's SDN, you might have to go through two levels of customer service before your problem is presented to your carrier. Similar problems exist for billing. If dealing with a subaggregator, find out exactly what your relationship is to all the entities involved.

■ **Who will bill me?** Will it be the aggregator or the carrier? Again, this depends on the individual service. Some aggregators give you a choice — standard bills from the carrier or customized bills from the aggregator. Also, what experience does your aggregator have with billing?

■ **Who is responsible for the bill?** While you may pay your monthly bill, you probably do not have overall financial responsi-

(continued on page 56)

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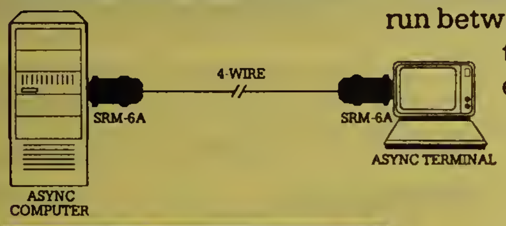
DATA COMMUNICATIONS

RAD TO THE RESCUE.

THE PROBLEM: Your data communications wires run between buildings. During a thunder storm, the equipment fails.



THE SOLUTION: RAD's family of miniature short range modems, SRM-6, are transformer-isolated to protect your equipment from power surges and lightning.

The SRM-6 family has sync and async modems for 4-wire or 2-wire full duplex, operating at data rates up to 19.2 kbps in point-to-point or multipoint environments. They are easy to install, and operate without AC power.

From the growing Rad family.

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data communications ltd.

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Circle Reader Service No. 19

NETVIEW-NET/MASTER NETWORK MANAGEMENT

We've Got the Guts ...
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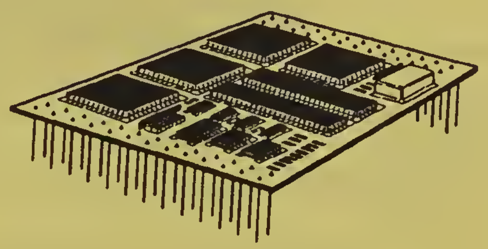
NETVIEW LPDA CHIP SET ...

NetView device-level management is now available in a revolutionary new single chip set. The power of advanced LPDA modem or DSU/CSU diagnostic control functions is provided in one OEM module. NetQuest's C-100 VLSI chip set offers easy integration into any transmission device. It is compact (4" x 2.75") and low in cost, yet high in reliability and performance.



... MAKES MODEMS NETVIEW COMPATIBLE

- NetView (Net/Master) management functions for analog or digital, leased or dial-up transmission products.
- Line speeds from 50 bps to 72 Kbps. Requires only 5V DC.
- Easily added to diagnostic or non-diagnostic modems and DSU's, Hayes AT (V.25 bis) compatible modems, switched DSU's and similar products.
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- Connectivity to the target modem via two TTL serial ports, allowing module to be installed in-line with the modem's serial TTL data interface.
- May be controlled over a standard microprocessor bus as an intelligent communication peripheral.

NetQuest's C-100 is all that you need to compete in the NetView modem arena, and become compatible with the industry's most popular network management system. Act now ... competitive modems require competitive network management.

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Share Printers. Put your printers where the users are with no added hardware or complications.

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Circle Reader Service No. 17

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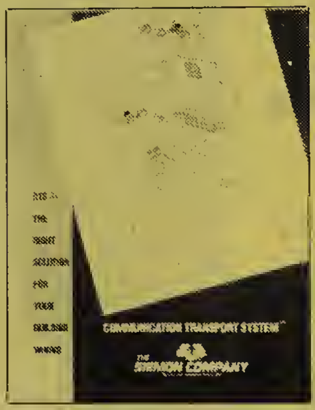
Free from the
Siemon Company
The CTS
Design Workbook



Plan your own Communications Transport System (CTS) using the Siemon Company's new CTS Design Workbook. The workbook covers everything from building entrance to workstation to show you how you can wire new buildings easily and economically using unshielded twisted-pair technology.

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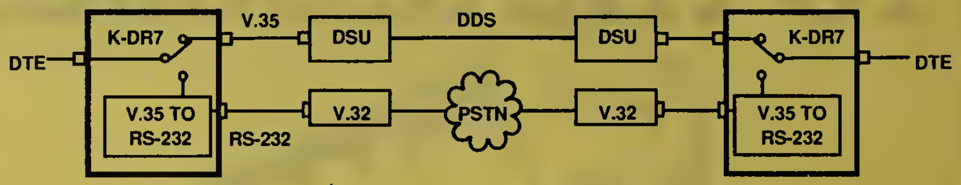

56 KBPS CIRCUIT WITH V.32 MODEM BACK-UP

K-AB-232	Industry's Most Versitile Automatic RS-232 A/B Switch.
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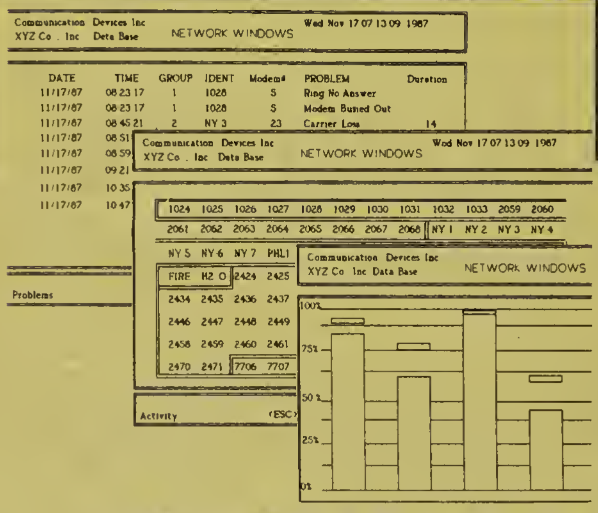
DIAL-UP MANAGEMENT



Communication Devices Inc
XYZ Co . Inc Data Base
NETWORK WINDOWS
Wed Nov 17 07 13 09 1987

DATE	TIME	GROUP	IDENT	Modem#	PROBLEM	Duration
11/17/87	08 23 17	1	1028	5	Ring No Answer	
11/17/87	08 23 17	1	1028	5	Modem Busied Out	
11/17/87	08 45 21	2	NY 3	23	Carrier Loss	14
11/17/87	08 51					
11/17/87	08 59					
11/17/87	09 21					
11/17/87	10 35					
11/17/87	10 47					

Problems

Communication Devices Inc
XYZ Co . Inc Data Base
NETWORK WINDOWS
Wed Nov 17 07 13 09 1987

1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 2059 2060
2061 2062 2063 2064 2065 2066 2067 2068 NY 1 NY 2 NY 3 NY 4
NY 5 NY 6 NY 7 PHL1
FIRE H2 O 2424 2425
2434 2435 2436 2437
2446 2447 2448 2449
2458 2459 2460 2461
2470 2471 7706 7707

Activity (ESC)

Communication Devices Inc
XYZ Co Inc Data Base
NETWORK WINDOWS

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Any Speed
Any Type,** Including **V.32**

Operating in 10 Countries
Field Proven since 1983

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PC Based System**

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NW Apr 90

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NW Apr 90

ETHERNET LINE MONITOR

NetLight-1

ETHERNET TM / IEEE 802.3
Attachment Unit Interface Line Monitor

- Provides On-Line Network Status Indication
- Provides Valuable Troubleshooting Information
- Easy to Install

NetLight-1 is a line monitor for the ETHERNET TM or IEEE802.3 Attachment Unit Interface. It is available in two versions. Version A provides LED's that indicate when a station is transmitting, receiving, or experiencing a Signal Quality Error. Version B provides these same indicators and also provides connectors for attaching an oscilloscope to monitor the signal waveforms. This simple device is useful for both troubleshooting and for providing immediate feedback of network status to the station operator.

For Additional Information or to place your order for Netlight-1 please call 1-800-525-2141 or contact:

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Circle Reader Service No. 9

LAN INSTALLATION AND SERVICE

TOOL KITS
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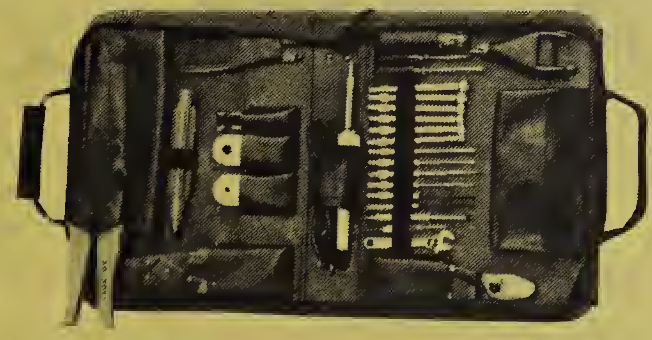

Now in one compact kit, everything you need to install or maintain Ethernet, either thick or thin wire.

Special tool selection includes toggle style strippers to speed coaxial cable preparation. High leverage cable cutter easily cuts even plenum rated cables cleanly and efficiently. Full cycle ratcheting crimper with dies for N-Style and BNC connectors. Unique hand drill tool for installing non-intrusive transceiver taps. RS232 stripper and crimper for fabricating transceiver drop cables.

Along with these specialized tools there are nutdrivers, Torx drivers, Phillips and slotted screwdrivers, pliers, hex keys, soldering equipment and more.

The tools are contained in a 13-1/2 x 10 x 2-1/2" gray Cordura Plus zipper case with various size pouches and elastic straps to hold the tools securely. Charge Visa, Mastercard or American Express.

JTK-8 Tool Kit . . . $349.00

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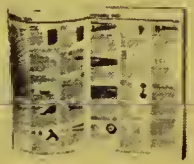

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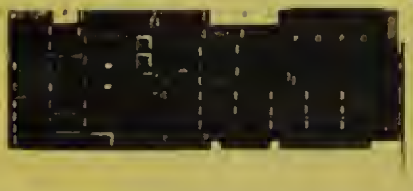
PLUG YOUR PC/AT DIRECTLY INTO HIGH-SPEED DIGITAL SERVICES.

NEW

PROMPTUS T-1 ACCESS MODULE

AT Bus-compatible WAN Adapter



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- Provides fully integrated access to
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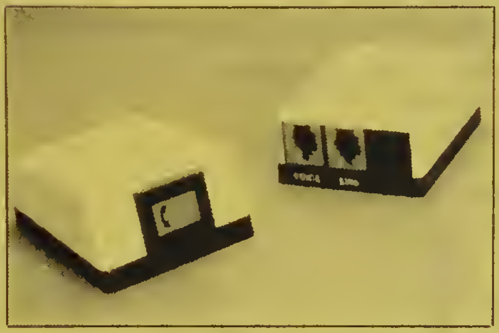
Crest introduces....
THE LINE STATUS INDICATOR
(Line Powered)



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- Know at a glance if your fax or modem is in use
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FEATURES:

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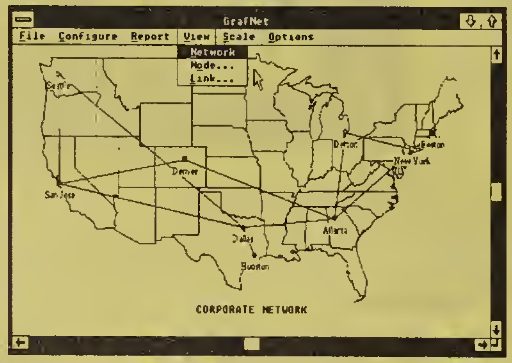

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Circle Reader Service No. 3

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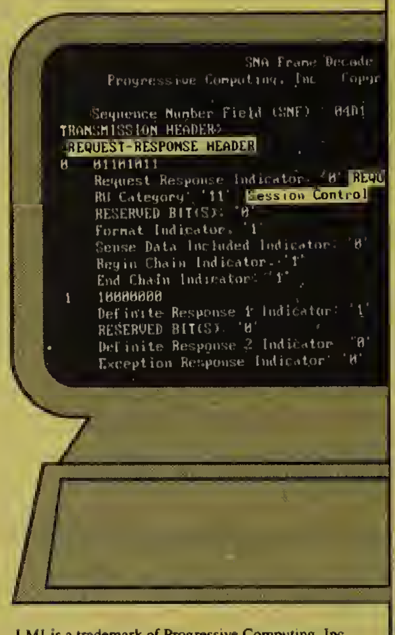
A PC-based protocol analyzer that speaks your language. Plain English!



```
                    SNA Frame Decode
  Progressive Computing, Inc    Copyr

  Sequence Number Field (SNF)   0401
TRANSMISSION HEADER:
REQUEST-RESPONSE HEADER
0   01101011
    Request Response Indicator: '0' REQU
    RU Category: '11'  Session Control
    RESERVED BIT(S): '0'
    Format Indicator: '1'
    Sense Data Included Indicator: '0'
    Begin Chain Indicator: '1'
    End Chain Indicator: '1'
1   10000000
    Definite Response 1 Indicator: '1'
    RESERVED BIT(S): '0'
    Definite Response 2 Indicator: '0'
    Exception Response Indicator: '0'
```

Now you can analyze data and zero in on errors more quickly. The LM1 Protocol Analyzer gives you easy-to-read decodes spelled out in plain English. It uses exact language from the standards for X.25, SNA, QLLC, and Q.931 protocols.

With the LM1, you don't miss a bit. It displays and explains every bit in a frame. It also highlights key details.

In-depth analysis in plain English. To see how the LM1 can expand your test equipment vocabulary, give us a call at (708) 574-3399.

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Omni I/O™

PC Based Protocol Analyzer

$495

- Fast, friendly user interface. Excellent data visibility.
- Integrated data capture, analysis, DOS file storage. Named configurations, formatted print.
- Async, Sync, BOP's (SDLC, X.25, etc.), Transparent, ASCII, EBCDIC, IPARS, user defined.
- Fits PC, AT compatible, 386 and Laptop with standard bus and CGA, EGA or VGA.
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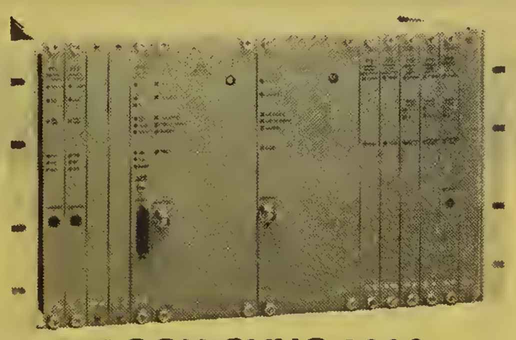

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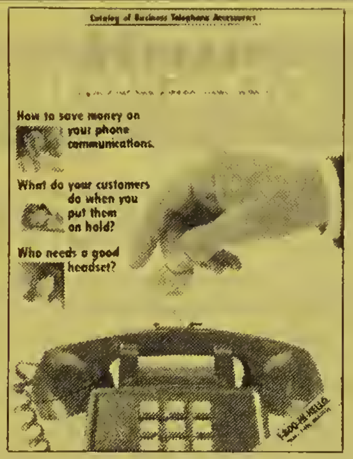
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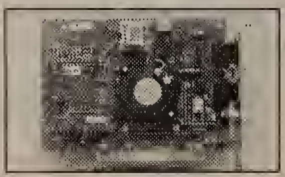

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(continued from page 48)

bility for the account. Typically, the aggregator does. However, under certain circumstances, you could be held financially responsible for nonpayment by other members. This is especially true in some cooperatives in which end users commit to paying the bill for the entire cooperative.

■ **What value-added services does the aggregator offer?** Network design and optimization is typically offered, but the level and depth of these services varies substantially. Find out exactly how the company intends to analyze your bill. Don't settle for an answer such as "We use state-of-the-art computer technology." Find out about the process and make an assessment of its true capabilities.

Also, beware of bias. When the firm is selling the services of just one carrier, the degree of optimization can be limited. Be wary of solutions that fit perfectly into what the aggregator is selling.

■ **What are the installation, monthly and annual costs?** Each aggregator charges different amounts for its services. Some charge a flat monthly fee, either by account or per end-user location. Some charge a percentage of improved savings, a portion of the savings that results from participating in the program. Still another method is to charge a flat fee to join and then a variable percentage of the end user's savings based on volume of usage. If percentages are involved, be sure to ask how the service aggregator verifies these improved discount levels.

■ **Does the company have extra profit sharing arrangements?** A few aggregators offer unique profit sharing arrangements in addition to the improved monthly savings. These can range from a percentage of overall annual sales to a fixed sum based on customer size. For instance, Consortium 2000, Inc. of Los Angeles offers its customers an annual dividend based on the total amount of their traffic during the previous year.

> Work with your aggregator to verify all line items.
>
> ▲▲▲

■ **How large a staff does the company have?** Is this a one-man outfit or a sizable company? If the firm is responsible for all billing and customer service for your company, be sure that it has the wherewithal to do the job.

If you have to switch from an AT&T account team to the aggregator's team, what differences will your firm see in response times? Are there 24-hour, seven-day-a-week help lines? How many people are on the account team? What is their experience level? Is there an 800 number for end users to call to report service problems?

■ **Is long distance the only type of service they aggregate?** Some companies, such as Centex Telemanagement, Inc., buy Centrex lines in bulk and pass the savings on to customers, adding telemanagement expertise in the process. Garden State Long Distance sells cellular service. In fact, some service aggregators are general buying clubs that deal with everything from facsimile paper to soap.

■ **Is the company a valid aggregator?** Some aggregators misrepresent their relationships with the long-distance carrier whose service they use. For example, this survey found one company that claimed to be officially reselling US Sprint services, when in fact a court order to cease and desist aggregating US Sprint services had been placed against the firm.

AT&T signs joint marketing agreements with aggregators, paying particular attention to the aggregator's credit worthiness, reputation, integrity, established business plans, marketing methods, size of existing sales force and anticipated target market. MCI and US Sprint do not condone aggregation but have no problem selling their services to legitimate resellers or through agents of the company. If a company represents itself as tied to a particular carrier, verify the relationship with the carrier's local sales office.

■ **Are the bills correct?** One often-mentioned criticism of AT&T is mistakes in billing. According to industry participants, AT&T's ability to accurately reflect discounts and charges on bills has been lacking. If you have joined or are planning to join any carrier's program, be sure to look closely at each month's bill. Work with your aggregator to verify all line items and usage costs.

■ **Can the aggregator provide savings for intrastate traffic?** Under some plans, this can't be done. Also, ask about intra-local access and transport area traffic. Some California resellers offer intra-California rates of 12 cents per minute. Service aggregation can cut this to nine cents per minute, plus additional revenues from profit sharing and network optimization services. In practice, this can sometimes bring rates down to as low as eight cents a minute.

■ **Who has control of my account?** If you sign a letter of agency with an aggregator, then that aggregator has total control over your long-distance traffic. The aggregator can even change your carrier without consulting you. Carefully read all agency agreements.

All in all, your best bet is to select an aggregator with a history of telecommunications experience that is open to a range of carrier and service solutions. Such a company is in the business for the long run and won't abandon you when tariffs change.

Service aggregation is now the most cost-effective option for most AT&T users. By signing with the right firm, an end user can boost discounts and possibly pick up value-added services as well.

> Your best bet is to select an aggregator with experience that is open to a range of solutions.
>
> ▲▲▲

However, this phenomenon is changing rapidly. All the carriers are changing their policies and plans on the run — trying to decide whether to continue or to start allowing or encouraging aggregation of services. AT&T's competitors are watching the communications giant closely to determine its future direction in this market.

The concept of buying bulk and selling piecemeal is not going to disappear. None of the long-distance carriers are opposed to legitimate reseller or rebiller operations, nor are they opposed to sales agency agreements for their products. MCI, US Sprint and a host of other long-distance carriers are simply opposed to the idea of service aggregation — acting like an agent for the prices of a reseller.

If anything, what we will see in upcoming months are adjustments to the market. AT&T is adapting to the impact service aggregation is having on its product and pricing plans. Certainly, sales channel conflicts cannot continue to occur and, at some point, third-party aggregation will need some constraints imposed.

AT&T will continue to limit service aggregation where it thinks it's necessary. Among the options AT&T has are:

■ **Tariff modifications:** Changing tariffs further to discourage aggregation of certain segments of the marketplace, areas where AT&T is confident of its market share.

■ **Account team limitations:** Limiting or removing direct customer support by forcing customers to deal with an aggregator first.

■ **Aggregator migration:** Migrating aggregators to a full alternate sales channel role in which they are AT&T-trained and compensated for sales to AT&T in select target markets. This resembles more of an agency approach to the problem.

But for the time being, the absence of language prohibiting nonaffiliated customers from taking advantage of AT&T multilocation discount plans should not keep a company from joining an AT&T buying group. It will be more difficult to find a US Sprint or MCI buying group that is not a reseller or rebiller.

If the tariffs are currently written to allow aggregation, then it makes sense to take advantage of the higher discounts through buying clubs. If AT&T does not let up, you might find MCI and US Sprint opening their programs as well. Besides, there will always be a way to skirt tariff language.

Right now, AT&T at least wants to keep the aggregation issue alive. It has been intent on stopping the erosion of its customer base and sees aggregation as one means to do so. Should AT&T further restrict the tariffs or marketing agreement pro-

(continued on page 58)

Who's what in the long-distance market

It is imperative to clarify the precise terminology of the industry to place the players in their appropriate groups.

■ **Carriers.** These companies occupy the highest end of the service provider spectrum. Typically, these providers own most of their facilities and have national and international networks. As such, they have their own sales forces, customer service and accounting departments, and billing facilities.

Carriers usually offer their services to resellers, rebillers, aggregators and third-party marketing groups. The best-known carriers in the long-distance market are AT&T, MCI Communications Corp. and US Sprint Communications Co.

■ **Service aggregators.** These entities buy multilocation volume discount plans and enroll other businesses as sites to gather volume discounts based on total calling at all sites. Typically, they do not own their facilities. The end user usually remains a customer of the carrier supplying service and is billed by the carrier with discounts based on all sites enrolled. The service aggregator typically receives revenue from either monthly management fees or a negotiated split of improved savings.

■ **Subaggregators.** These are similar to aggregators as defined above, but they use several other aggregator's discount plans for the service they provide, usually because of limited financial resources or other considerations.

■ **Resellers.** Considered a type of carrier, these companies lease most of their private circuits and purchase bulk facilities from carriers for resale under their own names. Resellers typically own their switches and have their own billing, sales and customer service departments. Since the reseller remits monthly bills, the end user is a customer of the reseller.

■ **Rebillers (also known as switchless resellers).** Similar to resellers, rebillers purchase service from carriers as multilocation customers. They receive master billing tapes from the carrier and rebill the service at their own stated rates. These rebillers have no switch or network, but they typically have sales, customer service and billing facilities. The end user is considered a customer of the rebiller.

■ **Agents.** These individuals or companies sell carrier services for the carrier on a commission basis. The end user is a customer of the carrier. The interconnect industry has many approved Centrex and cellular sales agents, for instance.

■ **Users groups (also called affinity groups).** An association or professional group whose members have a common relationship other than purchasing telecommunications services. Examples are banking associations and alumni groups. Some users groups provide service aggregation on a limited basis for their members only.

In general, most companies fall into one category or another. However, it is possible for a company to be several of these at once, such as Garden State Long Distance Telephone in Morristown, N.J. This company is a facilities-based carrier, an aggregator of AT&T's Multi-Location Calling Plan and Revenue Volume Pricing Plan, and an AT&T Software-Defined Network reseller. Its customers can opt for billing through either AT&T or Garden State Long Distance.

— Daniel Briere

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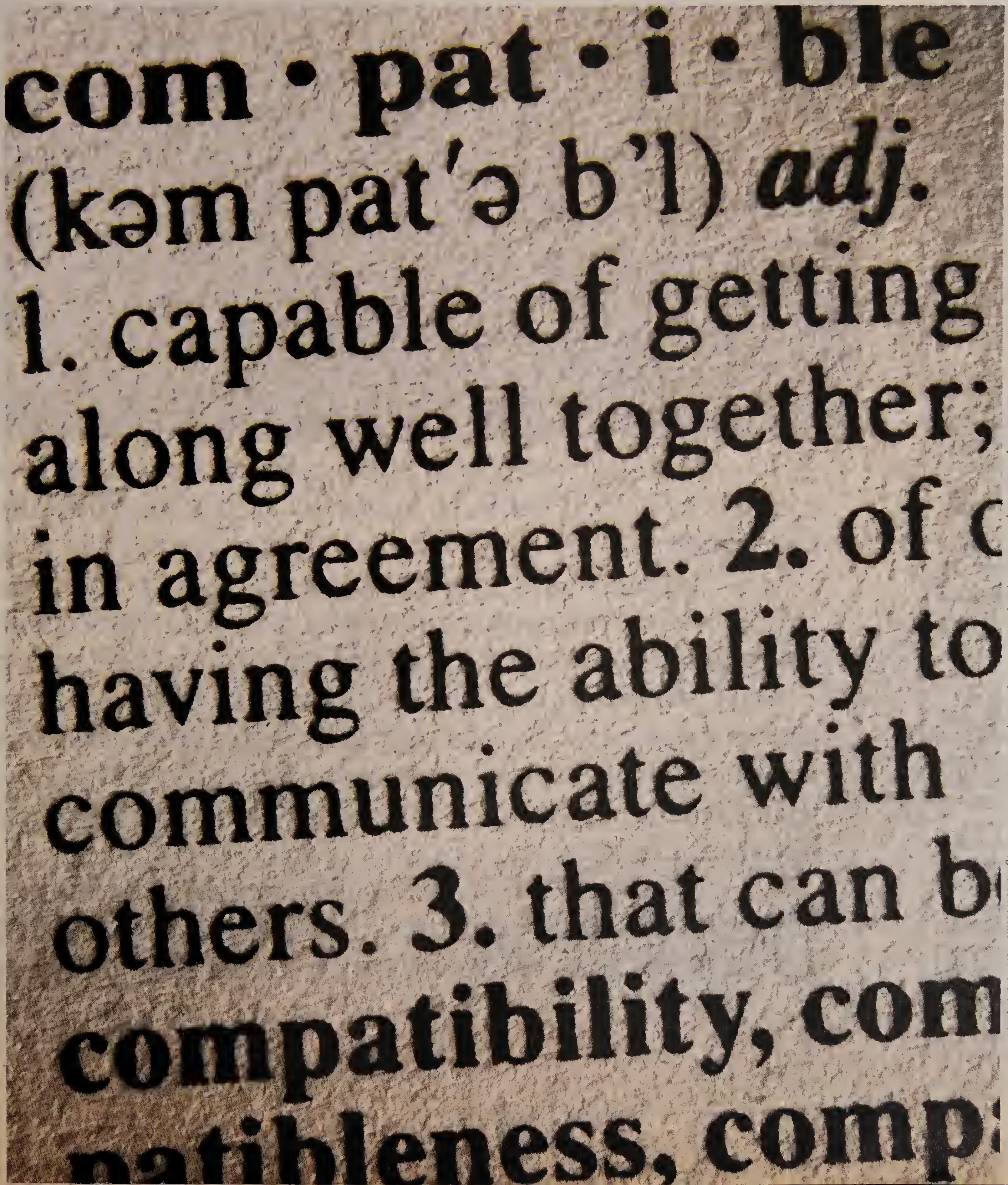

com · pat · i · ble (kəm pat′ə b′l) ***adj.*** 1. capable of getting along well together; in agreement. **2.** of c having the ability to communicate with others. **3.** that can b **compatibility, com patibleness, comp**

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Letters

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some of this information was trimmed from the article. Some stated vendor compatibilities for their available T-3 products are:

- Fibermux Corp.'s Magnum is compatible with its proprietary fiber interface and AT&T's Accunet T45.
- General DataComm, Inc.'s MegaMux TMS works with M13.
- Granger Telettra's Drop/Insert Intermediate Multiplexer DTI 45 and Terminal Multiplexer DTM 45 both work with M13.
- Infotron Systems Corp.'s StreamLine 45 is compatible with the Synchronous Transmission (SYNTRAN) format.
- Network Equipment Technologies, Inc.'s Integrated Digital Network Exchange (IDNX)/90 is compatible with Accunet T45.
- Newbridge Networks Corp.'s Model 3645 Mainstreet is compatible with M13.
- Timeplex, Inc.'s TX3/Superhub works with M13 and Accunet T45.

A discussion of the relationship between these products and the public network may clear up some confusion. First, AT&T offers two versions of Accunet T45 service: a non-subrated or "clear-channel" T-3 service and a subrated service. The subrated service involves a multiplexing and demultiplexing function on 28 T-1 lines.

A user that has a great deal of traffic between two sites and is using a T-3 circuit because it is less expensive than the number of necessary T-1 lines, may find that a clear-channel T-3 line is suitable. In this case, AT&T will just deliver the entire T-3 circuit from end to end, with no demultiplexing.

There are a few bits within the T-3 signal that the AT&T network will expect to see in the right place, but the rest of the transmission can be in whatever format the user wants. Thus, vendors can be Accunet T45-compatible.

Still, few users today have the need for a full T-3 signal between just two sites. Often, users order T-3 access into the AT&T point of presence, where AT&T demultiplexes the signal into its constituent T-1 circuits for routing. To accomplish this, AT&T requires that the user maintain compatibility with an M13 signal.

Any vendor that is M13-compliant can use either M28 or clear-channel circuits. But it is also possible to be compliant at the T-3 clear-channel level and not compliant at the M13 or subrated level.

SYNTRAN is a formatting standard that allows multiplexers to access DS0 channels directly. Although SYNTRAN has been standardized, it has not been widely adopted in the public network. For a SYNTRAN-based device to interface with an M13-compatible digital access and cross-connect system (DACS), the signal must first be broken into its 28 DS1 channels — thus defeating the purpose of buying a SYNTRAN-based device in the first place. SYNTRAN multiplexers are an M13 and DACS in the same box, built to provide DACS-type handling of DS1 circuits.

There are applications for transporting single data channels that can greatly exceed a T-1 circuit rate — for channel extension, distributed computing, imaging and so forth. In these cases, the user may want to carry the traffic in a subrated manner. If so, M13 compatibility becomes an issue. Otherwise, M13 compatibility is not an important concern.

Daniel Briere
President
TeleChoice, Inc.
Manchester, Conn.

Getting it together

continued from page 56

grams, the existing aggregators will have to decide whether to change marketing plans, make the jump to status as a full reseller or rebiller, or politely bow out of the market.

In the meantime, the aggregation market is open to nearly anyone with fairly decent sales ability who is willing to take some degree of risk, which pretty much defines an entrepreneur. However, competition among aggregators will reduce margins and force many to launch value-added services. Look for consolidation as aggregators themselves get aggregated. ◻

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This application heralds the introduction of a new concept in network management called the NYNEX ALLINK Network Management Solution. It will become a seamless, integrated network

Novell, Lotus to face marriage

continued from page 1

ternally yet," Manzi protested.

Obvious problem areas to be addressed include a clash of corporate cultures, a conflict in sales and distribution channel policies, the threat posed by Lotus to Novell's independent software vendors, and the polarization of Lotus applications to NetWare and away from other environments.

On the plus side, industry observers seemed pleased that the 66-year-old Noorda now has some strong backup.

"Noorda doesn't have any heirs apparent, whereas Manzi has a troika of Franks [King, Ingari and Moss] plus a Steve [Crumm], any of whom could step into his shoes," said Dave Atlas, an analyst with International Data Corp. "Over the last couple of years, Manzi has put together a top-notch team by raiding IBM."

But "one thing to watch out for is the possibility that the Lotus MBA crowd will ride out with their fancy degrees to Utah and clash with the Provo-ites," warned Mary Modahl, an analyst at Forrester Research, Inc. in Cambridge, Mass. "The cultures are so different, melding them is going to be a challenge."

Noorda attempted to make light of the differences, pointing to Novell's successful integration of the Silicon Valley culture during its acquisitions of Excelan, Inc. and Kinetics, Inc.

Culture clashes may pale in comparison to the problems the companies will face in combining sales forces and distribution channels. Lotus has stuck to selling directly to major accounts, while Novell, in recent years, has begun selling nearly all of its products through resellers.

However, because there isn't much overlap between their respective channels — Novell's value-added resellers don't tend to be Lotus dealers — this "potential monopolization of the channel is the greatest threat to Microsoft," Atlas said. But Manzi said, "We haven't thought about combining sales forces; we're nowhere near addressing that yet."

Manzi and Frank King, senior vice-president of Lotus' software products group, said the merger would lead to Lotus applications being more tightly integrated with NetWare than with other network environments.

Such integration could involve adding support for Novell's Internetwork Packet Exchange (IPX)/ Sequenced Packet Exchange protocols into Lotus' 1-2-3 and other Lotus applications so they'll operate more efficiently across a NetWare LAN.

It might also involve developing a version of Lotus' Notes groupware product that would run as a server-based NetWare Loadable Module under NetWare 386, or perhaps making Lotus' DataLens — an add-on product that links Lotus spreadsheets to various data base engines — an integral part of NetWare.

Asked about LAN Manager support, Manzi said Lotus would work with other "volume network platforms as they become established in the market and customers ask for them."

King wouldn't say whether Lotus would be able to bring about a tighter link between NetWare and the SQL Server data base engine comarketed by Microsoft and Sybase, Inc. Users would like to see direct support of NetWare protocols in SQL Server, an event apparently prevented by the Sybase/Microsoft contract negotiated before Lotus acquired 15% of Sybase last year.

"This restricting of interfaces by Microsoft is an example of the kind of thing that customers reject, because it is very narrow and closed," was all King would say.

Other issues aside, the proposed merger looks good on paper.

"In one fell swoop, Novell and Lotus get to join the billion-dollar software club, which only has two other members: Computer Associates International, Inc. and Microsoft," said Richard Dorfman, an associate with investment banker Broadview Associates in Fort Lee, N.J.

Added to the Novell/Lotus combination is strategic ally WordPerfect Corp., another strong Microsoft foe that recently passed Ashton-Tate Corp. to become the world's fourth largest software company in terms of revenue. Last week, the three firms entered into a joint product-support agreement.

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MCI stages $1.25b buyout

continued from page 1

far stronger,'' said Bert Roberts, MCI president and chief operating officer.

MCI has not decided whether it will assimilate Telecom*USA or make the smaller carrier a subsidiary. Whether the Telecom*USA name will be retained also has not been determined, an MCI spokesman said.

News of the deal surprised MCI and Telecom*USA customers, who characterized the merger as an MCI effort to build market share.

"The merger will make MCI larger, but I don't think that will [affect] my company in any way,'' said Karen Davis, telecommunications director for Kemper Corp., a Long Grove, Ill.-based insurance firm that uses MCI as its primary carrier for voice traffic.

"We just don't know at this point how our [Telecom*USA] business will be handled,'' said James Dronsfield, assistant director of telecommunications for Duke University in Durham, N.C.

Telecom*USA, formed in December 1988 by the merger of Teleconnect Co. and SouthernNet, Inc., provides switched and dedicated services to roughly 500,000 users in the Southeast and Midwest.

The carrier's average customer spends $500 to $5,000 a month on long-distance services, said Robert Self, president of Market Dynamics, Inc., a New York-based consultancy.

"This is a new area for MCI, which focuses on large corporations and residential customers,'' he said.

The merger would enable MCI, which reported $6.5 billion in sales and had nearly 13% of the long-distance market last year, to lengthen its lead over US Sprint, which netted sales of $4.3 billion and had 8.5% of the market for the same period. Telecom*USA had $713 million in sales in 1989 and a 1.4% share of the market, while AT&T had sales of $36.5 billion and a 72.6% share of the market.

Mark Kaiser, Telecom*USA senior vice-president, said, "The No. 1 reason we decided to merge was because the $42 a share that MCI offered is an excellent deal for our shareholders.''

Competitive ranking

How the merged companies stack up

Company	Total net route miles	Network switches
AT&T*	144,000	114 AT&T**
MCI Communications Corp.*	46,000	90 DSC, NTI
Telecom*USA, Inc.	3,000	16 DSC
US Sprint Communications Co.	23,000	46 NTI

Network makeup

	Fiber	Digital microwave	Analog microwave
MCI	17,000	13,000	16,000
Telecom*USA	3,000	—	—

*Figures as of year-end 1989.

**Number represents 4ESSs only.

DSC = Digital Switch Corp.

NTI = Northern Telecom, Inc.

GRAPHIC BY SUSAN SLATER

SOURCE: NETWORK WORLD

But analysts say the merger indicates that Telecom*USA did not think it could continue to effectively compete with the top three companies in its market. "Telecom*USA saw the writing on the wall,'' Self said.

Roberts said the MCI and Telecom*USA networks will be "blended and eventually operated as one.''

Telecom*USA maintains two nets: one a 2,700-route-mile system serving six Southeastern states, and the second bisecting Iowa and spanning 300 miles.

Currently, US Sprint's network contains more fiber — 23,000 route miles — than MCI's.

"MCI needs Telecom*USA's fiber,'' explained Daniel Briere, president of TeleChoice, Inc., a Manchester, Conn.-based consultancy.

Because MCI is funding the merger through loans from a bank consortium, its earnings during the first year of the agreement will be diluted. But the merger will enhance the carrier's bottom line in the second year, according to Roberts.

He said MCI will market its advanced services, such as Vnet, to the Telecom*USA customer base.

MCI customer Robert Heinze, principal specialist senior with McDonnell Douglas Corp.'s network support division in St. Louis, said the merger and network expansion may enable MCI to get more of his company's long-distance business. "We have small locations that we use other carriers to serve. If the MCI network is expanded, we could use MCI to get to our smaller [sites],'' he said.

Analysts said MCI's decision to boost its competitive strength through the costly merger may spur other carriers to adopt a similar strategy, adding fuel to the consolidation fire that has already swept the second tier of the long-distance market.

"This merger foretells major changes in the industry. There will be a large reduction in the number of carriers,'' Self said. Consolidation may become even more attractive if the FCC frees AT&T from dominant carrier status, making it an even tougher foe, he explained.

McGowan recovering after exploratory surgery

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — William McGowan, chief executive officer of MCI Communications Corp., underwent exploratory chest surgery at Presbyterian-University Hospital in Pittsburgh last week and was listed in fair condition following the operation.

MCI and hospital officials declined to reveal the purpose of the surgery but said it was "completely unrelated'' to McGowan's heart transplant in 1987.

McGowan is expected to return home in five to seven days, but it is unclear how soon he will return to his job. An MCI spokeswoman said McGowan will not relinquish his duties during his recuperation and that MCI President Bert Roberts will continue to handle day-to-day operations.

Presbyterian-University was the site where McGowan received his previous heart transplant. Dr. Bartley Griffith, who performed the transplant, also performed the exploratory surgery.

A family member said McGowan would issue a statement last week, but that was cancelled without explanation.

Users plan for net control

continued from page 4

by coming to agreement on how to implement those standards.

Blum projected that fully compliant OSI networks will not arrive in large numbers until 1995. But he said he foresees users transitioning to OSI net management in 1993 and 1994 as the standards become more firm.

"It seems reasonable to specify CMIS/CMIP in RFPs now and during the next few years,'' Blum said.

But a popular and lower priced alternative to CMIS/CMIP could hold OSI management back, observers said.

Users in the Transmission Control Protocol/Internet Protocol community that have utilized the standard to build multivendor networks have their own net management standard, the Simple Network Management Protocol (SNMP).

Although some TCP/IP users question the need for OSI, most say TCP/IP is only an interim step to OSI. In network management, for example, SNMP does not have the same powerful data base features found in CMIS/CMIP.

Then again, it does not require implementation of a full OSI stack, as does CMIS/CMIP. "SNMP has quite a lead,'' said Jeffrey Owen, operations manager for the Corporate Telecommunications Laboratory at Hughes Aircraft Co. in Long Beach, Calif. "CMIP is carrying a lot more overhead. It's a cost issue.''

Even while vendors are speeding their SNMP implementations to take advantage of growing demand, they will not ditch their plans to support CMIS/CMIP, analysts said. Hewlett-Packard Co. and 3Com Corp. are among the vendors that have announced support for CMIP in their management products.

Digital Equipment Corp. has also announced that CMIP will run as a native management protocol under DECnet Phase V and be supported under its Enterprise Management Architecture strategy, said Tony Viola, product marketing manager for network management in DEC's Networks and Communications Marketing organization.

Analysts said net management system vendors that have pledged conformance to OSI must be prepared to upgrade existing offerings. AT&T, for example, announced support for "pure OSI'' before OSI standards were stable or OSI interfaces for element management systems were available, said Jim Herman, principal of Northeast Consulting Resources, Inc. in Boston.

> In network management, SNMP does not have the same powerful data base features found in CMIS/CMIP.
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Yet, users probably do not need to be concerned about AT&T's commitment to upgrade its Accumaster Integrator net management system.

"AT&T is very sensitive about being accused of having a proprietary integrated network management system,'' Herman said. "AT&T made its best guess as to what the OSI standards will be. As soon as new OSI standards are set, AT&T will implement them into its offering. You can expect that other vendors that have committed to OSI, such as NCR [Corp.], will do the same.''

Xerox signs for Tariff 12 net

continued from page 2

year contracts with Prudential Insurance Co. and J.C. Penney Co., Inc., valued at $200 million and $160 million, respectively, according to AT&T.

Xerox will switch over to the custom network beginning in October, Bolton said.

Consequently, Xerox will end its membership in the Enhanced Private Switched Communications Service (EPSCS) consortium. Established in 1976, EPSCS is an AT&T private network consortium that serves 13 large users, including General Foods Corp. Bolton named cost savings as a major factor in the switch.

"AT&T can provide the services cheaper by building them on the public switched network,'' he stated. The company expects to save between 10% and 50% yearly under the Tariff 12 arrangement, depending on the service. No specific pricing data had been filed with the Federal Communications Commission for services to be provided under the Tariff 12 contract.

The network will also help Xerox improve the quality of its customer service. "Xerox is now positioned to take advantage of the cost-efficiencies and service flexibility afforded by a fully digital network,'' Bolton said.

Under the Tariff 12 deal, AT&T will build a new network management center in Chicago that will be dedicated to Xerox. AT&T staff in the new center, which will be in operation 24 hours a day, will handle fault management, provisioning management and some performance analysis, Bolton said. Xerox staff, located elsewhere, will be able to call up network management information from Sun Microsystems, Inc. workstations linked to the center.

Bolton said the dedicated AT&T center will be worth the additional cost because it promises significant improvement in network uptime. "By having a centralized network management center, we can better control AT&T,'' he said.

Bolton pointed out that AT&T operates a similar dedicated center to monitor the EPSCS network. At Xerox's request in the late 1970s, AT&T implemented the dedicated network management center concept.

Separately, Xerox has plans to consolidate its own corporate network management centers, now located in Leesburg, Va., and Rochester, N.Y. The new Xerox network management center, to open in late May, will be located in a facility in Webster, N.Y.

No easy way to justify integrated mgmt.

continued from page 4

master Integrator would have been useful to tie NetView to the city's telecommunications network and various other element management systems.

The user said this will change as the city moves toward a more distributed environment and installs about a dozen local-area networks and mid-range computers from a variety of vendors. At that time, the city will have to reevaluate its track record at pinpointing and resolving network problems and consider the benefits of a product such as the Accumaster Integrator.

For users that need integrated systems today and are willing to pay the price, a good way to start the justification process is to determine the amount of network downtime and quantify how much a system can be expected to improve that figure.

Fran Garrett, VAX system manager for the Union-Tribune Publishing Co. in San Diego, said users should be able to show how a net management system would cut downtime by bringing it on-site for evaluation. They can then run tests to determine if the system would be proactive in identifying problems that could cause outages.

But reducing downtime is only a starting point. "The more interesting issue is productivity," Herman said. That means selling management on the idea that a more sophisticated management system would help support network growth without dramatic increases in support staff.

Another justification is that integrated net management systems are a prerequisite to automation, which will further cut net support staff because fewer people are needed to respond to everyday problems. "That's where I think the payback will come," said Mark Knittel, manager of network management systems for IBM.

Rick Roberts, staff manager for network management systems at AT&T, admitted that "you have to take a fresh look at cost justification to come up with a reasonable business case" for buying Accumaster Integrator.

Among the ways AT&T recommends justifying its system is looking at the benefits — in terms of staffing and time savings — of keeping configuration and statistical data in a single data base, as opposed to on a variety of personal computers, ledgers and host data bases.

That is one of the fundamental advantages of an integrated system because it gives users a single coherent look at statistical and performance data from a variety of sources rather than a fragmented collection of data that they must then piece together.

Roberts said Accumaster Integrator lets users put their most effective technicians to better use by giving them responsibility for a larger percentage of the network. It also makes those technicians more productive because it lets users place them in a regular office environment instead of at the main data center.

FCC approval of ONA plans a milestone

continued from page 2

basic and enhanced services and be permitted to purchase services on an unbundled basis. Users will also be permitted to purchase ONA services.

The FCC, RBHCs and the enhanced services industry have been working for years to resolve controversial ONA issues such as the unbundling of transmission elements from enhanced features, uniformity in services and deployment schedules, tariffing, and jurisdictional issues among the states.

FCC staff members last week explained briefly what will be required of the RBHCs in implementing ONA services. The full text of that decision will probably not be released for a few weeks.

Richard Firestone, chief of the FCC's Common Carrier Bureau, said he believes issues have been sufficiently resolved to allow the RBHCs to begin offering ONA services. But some users and carriers said the FCC may not have asked for enough modifications to the RBHCs' original ONA plans to ensure that rival providers and users will be able to get the services they need, when they need them.

"It still seems that the [RBHCs] have individual plans with separate rates and structures," said Leon Kestenbaum, counsel for Sprint International (formerly Telenet Communications Corp.), a value-added network provider and critic of the ONA plans. "It doesn't seem [like the FCC] did anything to shape or manage the plans," he said.

In its order, the FCC stated that the RBHCs have reworked their plans to achieve uniformity and the plans now "substantially comply" with the goal of preventing discrimination against rivals.

For example, the FCC said that in the RBHC's initial ONA plans, only 29 services were proposed by all seven companies. Now, 37 services will be offered initially by all seven. Another 26 services will be offered by six of the seven companies.

Enhanced service providers also insist that the carriers must introduce services in a uniform time frame. Firestone said he believes the agency dealt with that problem adequately. However, he acknowledged that there could be a variance in implementation schedules, depending on the network facilities a carrier has in place.

"We have not imposed an obligation that companies replace every switch or upgrade every software package in each region simultaneously," Firestone said.

The RBHCs will be obligated to make services available where technically feasible, he said.

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continued from page 1

who have studied the issue understand that. Certainly this [Federal Communications Commission] understands that throwing a market share number around isn't going to indicate that AT&T is dominant in a particular market. It is going to take more than that to frighten, so to speak, this commission into assuming AT&T is dominant. Some figures tell you we're losing market share dramatically. That's not the test of dominance.

Then what measures show you are no longer the dominant carrier?

A dominant firm would raise its rates whenever it wanted and not worry about competition. That's obviously not what AT&T has been doing. [We] can't raise prices in any market because of competition. Take the 800 market. How are we acting in the 800 market? Are we raising our prices? No, we're lowering prices. The 800 market has only been open for about 2½ years and we've lost 17% market share.

But if you take away the regulations, couldn't the picture change dramatically?

Can we exercise market power? Can we stop someone from coming into the market? Absolutely not. The barriers to entry in the long-distance market are minimal.

You and the family could get together and get into the long-distance business if you wanted to. If we had the ability to stop others from [entering], there would be some power there. We don't have that power.

If we were to raise prices 10%, wouldn't customers go to MCI or [US] Sprint or any of the other long-distance carriers?

It's interesting that you could lose that much market share and cut pricing and yet remain pretty steady in revenue over the years.

Our competitors are growing at three to four times [the rate] we're growing. That's not a good situation. My competitor is growing at 40%, the whole market is growing at 17% and I'm growing at 6%. It doesn't take a nuclear physicist to figure out how long it will take a competitor to overtake me. You want to grow at least at the pace of the market. We're not.

Why have we continued to earn while losing market share? We've cut costs. Second, the entire market has grown. [But] the marketplace isn't always going to grow that way. You have to be more efficient, more innovative, you have to add value that your competitors can't.

> "The barriers to entry in the market are minimal. If we had the ability to stop others from [entering], there would be some power there. We don't have that power."
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What about undercutting competitors?

To what extent can we lower our prices and drive MCI or US Sprint out of business? We're talking about billion-dollar corporations. This would be a very expensive campaign to drive everybody out. We would have to take substantial losses and make that money up by raising prices later.

What happens if they fail? Someone buys them at a lower price and we have new competitors. The fiber is in the ground. The facilities are there. There is no incentive for AT&T to drive anybody out of business. We drive everybody out and then we raise our prices. No one is going to regulate us? It's not a rational plan.

In the past five years, service options have exploded and rates have plummeted. As a user, why would I want the regulatory environment to change?

If you believe in the American system of competition, you believe that competition makes competitors sharper. They become more innovative, more cost conscious. The consumer will benefit. If you handicap one of the major suppliers, [you] provide an umbrella under which other competitors can run free. But the full competitive process [doesn't] work.

What is it that competitors can do today that you can't?

They can use the regulatory process to slow down AT&T and hold back new services and price reductions in order to serve their own business interests.

If competitors have a legitimate concern, why shouldn't they use the regulatory process?

There's a fine line between using the process to hold back a competitor and using the process to have a legitimate concern reviewed. Most of our tariff's are opposed by competitors and not by customers. If AT&T was doing something that caused problems, customers would complain. But competitors are saying, 'Don't let AT&T do that.' It's a perverse aspect of regulation. Regulation is to protect customers, not competitors.

You implied there is a fine line between using and abusing the regulatory process. Can you give an example of someone crossing that line?

Tariff 12. It's obvious competitors came in to slow AT&T. Competitors' salespeople say dealing with AT&T is slow because of the regulatory delays that are inherent in AT&T's response to bids. If you're a competitor of AT&T, you can deliver a product or service today and AT&T has to wait 45 days or beyond to introduce its service. That costs our customers money. It is an advantage competitors use in the marketplace.

What level of regulation is appropriate for AT&T today? Complete deregulation?

The same level of regulation as our competitors. The same tariff filing process, the same time limits, the same data to be provided to the commission. Not deregulation — the same regulation.

Was deregulation of AT&T a promise of divestiture?

There is the perception that once the RBHCs were spun off that AT&T would be moving down the road of lesser and lesser regulation. What has fallen down? I think the process just moves slowly. It's not something that anyone planned. It would have been nice if someone in the proper authority would have said that three years from now, these are the sorts of regulations that will be removed from AT&T. That hasn't happened. Now, this commission is about to act on a notice of proposed rule making we believe is long overdue.

Within that notice of proposed rule making, which change is most important?

They're all important. I think we've got a very good shot at all of them. The customer has the power to bring in the suppliers and say, 'Make me your best offer.' So for custom networks, a non-common carrier approach seems to be very clean.

Now, our competitors file tariffs and then make offers that are not tariff-based. That causes the problem. When they file tariffs, they ought to follow them. They're not. That's where we get into the problem with Tariff 15. We're saying, 'Why doesn't the commission just kind of get out of the way?' If you want a tariff, we have general tariff offerings for you. If you don't want tariffs and you want to deal with us on a one-to-one basis, fine. When the customer says, 'I want a special offering and I don't want anybody else to know about it,' we ought to be able to do that.

What about the other classes of business services?

We think it's a very appropriate time for the commission to start streamlining.

What about continued regulation in international and 800 services?

People have to be careful that they don't fall into the trap of just [looking] at market share. We're going to show that 800 services are highly competitive, as are international [services].

If a customer says, 'I'm interested in this service at X price,' and you feel you've made the very best offer you can and are above cost, do you feel confident that if US Sprint or MCI gets the deal, they will be losing money?

No, I would say it differently. If you took away the restraints of the regulatory process that our competitors don't have, we can compete with them on any service. It shouldn't be that you've got regulation and added costs and time delays and I'm not going to deal with you. It ought to be based on whether we can compete. Let the best communications provider win.

> "AT&T has to wait 45 days or beyond to introduce its service. That costs our customers money. It is an advantage competitors use in the marketplace."
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Going back to custom nets, the FCC requires that Tariff 12s be non-customer-specific. But aren't they worded so they really apply to one user?

We have a couple of customers that are looking at some of those options right now. Sometimes it might be true that it's very specific. But you might find a competitor who says, 'That's a darn good option. We can use it.'

If I'm a user spending a good deal of time working out a Tariff 12, how am I going to feel about AT&T selling the package to my rival?

You're making my argument now for why the tariff process hurts customers. If you're an auto parts manufacturer, you want to get one up on your competitor. You don't want him to know about that tariff. So why should you have all that put in a contract and put out in the public. Your competitors are the only ones really interested in that.

Are you saying we're going to see contracts signed with competitors of some initial Tariff 12 customers?

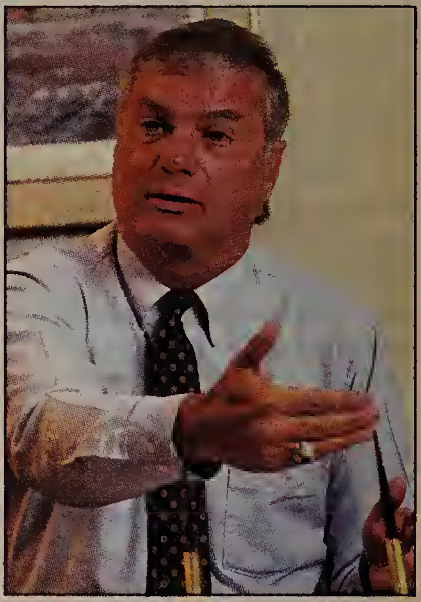
Could very well be. The competitors know exactly what those contracts are and can avail themselves of the tariffs.

With these custom nets, aren't you creating a two-tier society: one set of big users you'll work closely with and everybody else?

You can say, 'I'm a small or medium-sized customer and I'd like you to make me an offer, AT&T.' We'd be happy to do so. We don't want to lose any customers. It's a mutual thing. Do you want it, do we want it?

Were Tariffs 12, 15 and 16 an attempt by AT&T to see how far you could push the regulatory envelope?

The marketplace is demanding certain things. Our competitors are providing those things. We're responding to the marketplace and to our competitors, and we feel the Communications Act [of 1934] and the rules of this commission permit that.



Is part of the problem that customers are hesitant about these deals?

You're absolutely right. Competitors are using the window between now and the time the commission decides its [rule making] to lock up these customers. We get every indication from [FCC] Chairman [Alfred] Sikes that this is not the sort of thing he will delay.

Still, there is an awful lot of market out there that could be lost in the next several months. ☐

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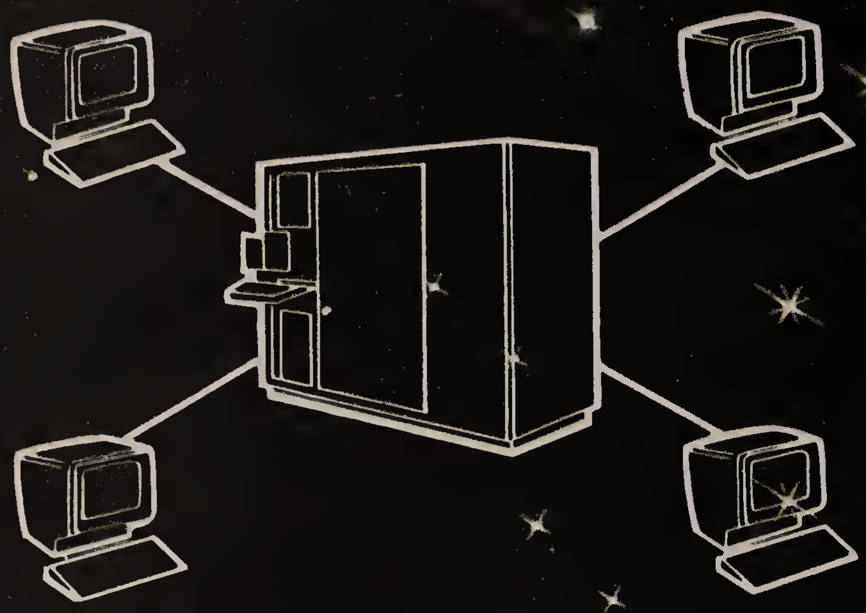

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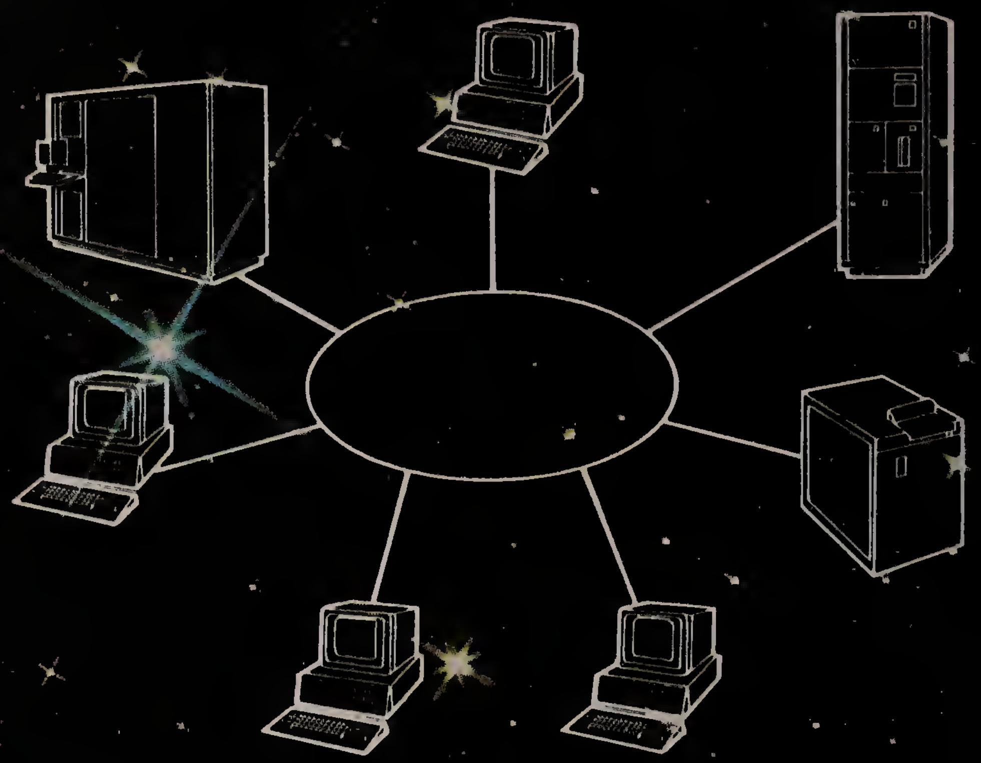

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